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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

EMC

CV 11-00192

ASUSTeK COMPUTER INC., a Taiwan corporation, ASUS COMPUTER INTERNATIONAL, a California corporation, PEGATRON CORPORATION, a Taiwan corporation, PEGATRON TECHNOLOGY SERVICE INC., an Indiana corporation, UNIHAN CORPORATION, a Taiwan corporation, ASROCK INCORPORATED, a Taiwan corporation, and ASROCK AMERICA, INC., a California corporation,

Plaintiffs,

v.

AFTG-TG, L.L.C., a Wyoming limited liability company, PHILLIP M. ADAMS & ASSOCIATES, L.L.C., a Utah limited liability company and PHILLIP M. ADAMS, an individual,

Defendants.

Case No. _____

COMPLAINT FOR DECLARATORY JUDGMENT OF NON-INFRINGEMENT AND INVALIDITY OF U.S. PATENT NOS. 5,983,002; 6,401,222; 6,687,858; 6,691,181; 6,842,802; 7,069,475; 7,249,203; 7,251,752; 7,366,804; 7,409,601; 7,472,207; AND 7,653,766

Plaintiffs ASUSTeK Computer Inc., ASUS Computer International (collectively, the "ASUSTeK Plaintiffs"), Pegatron Corporation, Pegatron Technology Service Inc., Unihan

Corporation, ASRock Incorporated, and ASRock America, Inc. (collectively, the "Pegatron Plaintiffs") (the ASUSTeK Plaintiffs and the Pegatron Plaintiffs are collectively referred to as "Plaintiffs"), allege as follows:

NATURE OF THE ACTION

1. This is an action for declaratory judgment of non-infringement and invalidity of United States Patents Nos. 5,983,002 ("the '002 Patent"); 6,401,222 ("the '222 Patent"); 6,687,858 ("the '858 Patent"); 6,691,181 ("the '181 Patent"); 6,842,802 ("the '802 Patent"); 7,069,475 ("the '475 Patent"); 7,249,203 ("the '203 Patent"); 7,251,752 ("the '752 Patent"); 7,409,601 ("the '601 patent"); 7,366,804 ("the '804 patent"); 7,472,207 ("the '207 patent"); and 7,653,766 ("the '766 Patent") (collectively, the "Adams Patents").

JURISDICTION AND VENUE

2. Plaintiffs file this Complaint against Phillip M. Adams, an individual ("Adams"), Phillip M. Adams & Associates, L.L.C. ("PMAA"), and AFTG-TG L.L.C. ("AFTG") (collectively, "Defendants") pursuant to the patent laws of the United States, Title 35 of the United States Code, with a specific remedy sought based upon the laws authorizing actions for declaratory judgment in the federal courts of the United States, 28 U.S.C. §§ 2201 and 2202.

3. This Court has subject matter jurisdiction over this action, which arises under the patent laws of the United States, pursuant to 28 U.S.C. §§ 1331 and 1338(a), and under the Federal Declaratory Judgment Act, 28 U.S.C. §§ 2201 and 2202.

4. Personal jurisdiction and venue are proper in this District pursuant to 28 U.S.C. §§ 1391 and 1400(b). Most of the Plaintiffs conduct business in this District, and events that give rise to this action occurred in this District. Upon information and belief, Defendants have transacted business in this District by providing consulting services, negotiating licensing arrangements, and threatening litigation in this District, and by participating in litigation in courts in this District.

INTRADISTRICT ASSIGNMENT

5. This case is an Intellectual Property Action subject to district-wide assignment under Civil Local Rule 3-2(c).

THE PARTIES

6. Plaintiff ASUSTeK Computer Inc. ("ASUSTeK") is a Taiwan corporation with its principal place of business at 15 Li-Te Road, Beitou District, Taipei 112, Taiwan. ASUSTeK is a designer, developer and manufacturer of computers and other consumer electronic products. ASUSTeK's products are shipped into and sold in this District.

7. Plaintiff ASUS Computer International ("ACI") is a California corporation with its principal place of business at 800 Corporate Way, Fremont, California 94539. ACI is a wholly-owned subsidiary of ASUSTeK and sells ASUSTeK products under the ASUS brand name.

8. Plaintiff Pegatron Corporation ("Pegatron") is a Taiwan corporation with its principal place of business at 5F, No. 76, Ligong Street, Beitou District, Taipei 112, Taiwan. Pegatron is a Design and Manufacturing Service ("DMS") company. Pegatron has technical support and service facilities in this District.

9. Plaintiff Pegatron Technology Service Inc. ("PTS") is an Indiana corporation with its principal place of business at 121 River Ridge Circle, Jeffersonville, Indiana 47130. PTS is a wholly-owned subsidiary of Pegatron. PTS provides after-sale service to companies located in this District.

10. Plaintiff Unihan Corporation ("Unihan") is a Taiwan corporation with its principal place of business at No. 150, Li-Te Road, Beitou District, Taipei 112, Taiwan. Unihan is a wholly-owned subsidiary of Pegatron. Unihan designs, manufactures and sells computer peripherals and audio-video products for other brand-name companies.

11. Plaintiff ASRock Incorporated ("ASRock") is a Taiwan corporation with its principal place of business at 2F, No. 37, Sec. 2, Jhongyang South Road, Beitou District, Taipei 112, Taiwan. ASRock is a subsidiary of Pegatron. ASRock is a manufacturer of motherboards and computers. ASRock's products are shipped into and sold in California.

12. Plaintiff ASRock America, Inc. ("ASRA") is a California corporation with its principal place of business at 13848 Magnolia Avenue, Chino, California 91710. ASRA is a subsidiary of Pegatron and sells and provides customer support for ASRock products in California.

13. On information and belief, Defendant AFTG was a Utah limited liability corporation that was voluntarily dissolved on October 15, 2010, that purportedly reformed as a Wyoming limited liability company, effective November 22, 2010, with a mailing address of 325 Federal Heights Circle, Salt Lake City, Utah 84103, and a registered agent address of Quinn Dumke LLC, 109 E. 17th Street, Suite 13, Cheyenne, Wyoming 82001.

14. On information and belief, Defendant PMAA is a Utah limited liability company with an address at 325 Federal Heights Circle, Salt Lake City, Utah 84103. PMAA has an alternative address at Post Office Box 1207, Bountiful, Utah 84011. On information and belief, PMAA was also registered as a Wyoming limited liability company having a mailing address of 325 Federal Heights Circle, Salt Lake City, Utah 84103, and a registered agent address of Quinn Dumke LLC, 109 E. 17th Street, Suite 13, Cheyenne, Wyoming 82001.

15. On information and belief, Defendant Adams was a resident of Henderson, Nevada during 2010, but now claims to be a resident of Afton, Wyoming.

THE ADAMS PATENTS

16. The '002 Patent is entitled "Defective Floppy Diskette Controller Detection Apparatus and Method." A true and correct copy of the '002 Patent is attached hereto as Exhibit E. On its face, the '002 Patent identifies Adams as the inventor. According to assignment records available via the United States Patent and Trademark Office's ("USPTO") official website (http://assignments.uspto.gov/assignments/q), the USPTO identifies PMAA as the current owner of the '002 Patent by assignment.

17. The '222 Patent is entitled "Defective Floppy Diskette Controller Detection Apparatus and Method." A true and correct copy of the '222 Patent is attached hereto as Exhibit F. On its face, the '222 Patent identifies Adams as the inventor. According to assignment records available via the USPTO's official website, the USPTO identifies PMAA as the current owner of the '222 Patent by assignment.

18. The '858 Patent is entitled "Software-Hardware Welding System." A true and correct copy of the '858 Patent is attached hereto as Exhibit G. On its face, the '858 Patent identifies Adams as the inventor. According to assignment records available via the USPTO's

official website, the USPTO identifies PMAA as the current owner of the '858 Patent by assignment.

19. The '752 Patent is entitled "Computerized Product Improvement Apparatus and Method." A true and correct copy of the '752 Patent is attached hereto as Exhibit H. On its face, the '752 Patent identifies Adams as the inventor. According to information available via the USPTO's office websites, no assignments of the '752 Patent have been recorded with the USPTO.

20. The '475 Patent is entitled "Software-Hardware Welding System." A true and correct copy of the '475 Patent is attached hereto as Exhibit I. On its face, the '475 Patent identifies Adams as the inventor. According to assignment records available via the USPTO's official website, the USPTO identifies PMAA as the current owner of the '475 Patent by assignment.

21. The '601 Patent is entitled "Read-Write Function Separation Apparatus and Method." A true and correct copy of the '601 Patent is attached hereto as Exhibit J. On its face, the '601 Patent identifies Adams as the inventor. According to assignment records available via the USPTO's official website, the USPTO identifies PMAA as the current owner of the '601 Patent by assignment.

22. The '181 Patent is entitled "Programmatic Time-Gap Defect Detection Apparatus and Method." A true and correct copy of the '181 Patent is attached hereto as Exhibit K. On its face, the '181 Patent identifies Adams as the inventor. According to assignment records available from the USPTO, AFTG-TG, L.L.C., a corporation of the State of Utah having a principal place of business at 325 Federal Heights Circle, Salt Lake City, Utah 84103, is identified as the current owner of the '181 Patent by assignment.

23. The '203 Patent is entitled "Programmatic Time-Gap Defect Detection Apparatus and Method." A true and correct copy of the '203 Patent is attached hereto as Exhibit L. On its face, the '203 Patent identifies Adams as the inventor. According to assignment records available from the USPTO, AFTG-TG, L.L.C., a corporation of the State of Utah having a principal place

of business at 325 Federal Heights Circle, Salt Lake City, Utah 84103, is identified as the current owner of the '203 Patent by assignment.

24. The '207 Patent is entitled "Optimized-Incrementing, Time-Gap Defect Detection Apparatus and Method." A true and correct copy of the '207 Patent is attached hereto as Exhibit M. On its face, the '207 Patent identifies Adams as the inventor. According to assignment records available from the USPTO, AFTG-TG, L.L.C., a corporation of the State of Utah having a principal place of business at 325 Federal Heights Circle, Salt Lake City, Utah 84103, is identified as the current owner of the '207 Patent by assignment.

25. The '802 Patent is entitled "Programmatic Time-Gap Defect Correction Apparatus and Method." A true and correct copy of the '802 Patent is attached hereto as Exhibit N. On its face, the '802 Patent identifies Adams as the inventor. According to assignment records available from the USPTO, AFTG-TG, L.L.C., a corporation of the State of Utah having a principal place of business at 325 Federal Heights Circle, Salt Lake City, Utah 84103, is identified as the current owner of the '802 Patent by assignment.

26. The '804 Patent is entitled "Programmatic Time-Gap Defect Correction Apparatus and Method." A true and correct copy of the '804 Patent is attached hereto as Exhibit O. On its face, the '804 Patent identifies Adams as the inventor. According to assignment records available from the USPTO, AFTG-TG, L.L.C., a corporation of the State of Utah having a principal place of business at 325 Federal Heights Circle, Salt Lake City, Utah 84103, is identified as the current owner of the '804 Patent by assignment.

27. The '766 Patent is entitled "Time-Gap Defect Detection Apparatus and Method." A true and correct copy of the '766 Patent is attached hereto as Exhibit P. On its face, the '766 Patent identifies Adams as the inventor. According to assignment records available from the USPTO, AFTG-TG, L.L.C., a corporation of the State of Utah having a principal place of business at 325 Federal Heights Circle, Salt Lake City, Utah 84103, is identified as the current owner of the '766 Patent by assignment.

EXISTENCE OF AN ACTUAL CONTROVERSY

28. There is an actual controversy within the jurisdiction of this Court under 28 U.S.C. §§ 2201 and 2202.

29. On October 18, 2010, AFTG and PMAA filed four complaints in the United States District Court for the District of Wyoming for patent infringement (collectively, "the Wyoming Actions"), against 55 defendants, including Plaintiffs. One complaint included Pegatron, PTS and Unihan (Case No. 10-cv-227-F, attached hereto as Exhibit A), the second complaint included ASUSTeK and ACI (Case No. 10-cv-229-F, attached hereto as Exhibit B), and the third complaint included ASRock and ASRA (Case No. 10-cv-228, attached hereto as Exhibit C). The fourth complaint originally included Pegatron, PTS and Unihan (Case No. 10-cv-230, attached hereto as Exhibit D), but subsequently dismissed these parties from that case on October 25, 2010.

30. In the Wyoming Actions, PMAA and AFTG asserted all twelve Adams Patents against the Pegatron Plaintiffs, and nine of the Adams Patents against the ASUSTeK Plaintiffs. *See* Exhibit A at ¶¶ 1-2; Exhibit B at ¶¶ 1-2; Exhibit C at ¶¶ 1-2.

31. In the Wyoming Actions, PMAA and AFTG allege that the Plaintiffs have "infringed various claims of each of the patents-in-suit in violation of 35 U.S.C. § 271 through, among other activities, the manufacture, use, importation, sale and/or offer for sale of computer chips, motherboards, computers and other products, as well as using infringing methods including but not limited to testing of Defendants' products as a part of the manufacturing process." *See* Exhibit A at ¶ 22; Exhibit B at ¶ 16; Exhibit C at ¶ 52.

32. PMAA and AFTG further allege that Plaintiffs "have had actual and/or constructive notice of their infringement of the patents-in-suit, including actual pre-complaint notice." *See* Exhibit A at ¶ 23; Exhibit B at ¶ 17; Exhibit C at ¶ 53.

33. PMAA and AFTG further allege that Plaintiffs "have also knowingly and intentionally induced others to infringe under 35 U.S.C. § 271(b) (such as its customers and end-users… throughout the United States) by intentionally aiding, assisting and encouraging their infringement, and… have knowingly contributed to the infringement of others under 35 U.S.C.

§ 271(c) (such as its customers and end-users… throughout the United States) by supplying their technical know-how and infringing computer chips and motherboards…." *See* Exhibit A at ¶ 22; Exhibit B at ¶ 16; Exhibit C at ¶ 52.

34. Based upon the above facts, there is an actual justiciable controversy concerning each of the Adams Patents within the jurisdiction of this Court under 28 U.S.C. §§ 2201 and 2202.

FIRST CLAIM

Declaratory Judgment of Non-Infringement of the '002 Patent

35. The Pegatron Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 in their entirety.

36. PMAA and AFTG allege in the Wyoming Actions that the Pegatron Plaintiffs have been and are infringing the '002 Patent as well as inducing and contributing to the infringement of the '002 Patent by others.

37. The Pegatron Plaintiffs' products and activities have not and do not infringe, induce infringement or contribute to the infringement by others of any claim of the '002 Patent.

38. There exists, therefore, an actual and justiciable controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Pegatron Plaintiffs and the Defendants with respect to the non-infringement of the claims of the '002 Patent.

39. Absent a declaration of non-infringement, Defendants will continue to wrongfully allege infringement of the '002 Patent against the Pegatron Plaintiffs and thereby cause them irreparable injury and damage.

40. Accordingly, the Pegatron Plaintiffs seek a judicial determination and declaration that the Pegatron Plaintiffs do not infringe, induce infringement or contributorily infringe any claim of the '002 Patent.

SECOND CLAIM

Declaratory Judgment of Invalidity of the '002 Patent

41. The Pegatron Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 40 in their entirety.

42. The claims of the '002 Patent are invalid for failing to meet one or more of the conditions and requirements for patentability set forth under 35 U.S.C. §§ 101, 102, 103 and/or 112.

43. There exists, therefore, an actual controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Pegatron Plaintiffs and the Defendants with respect to the invalidity of the claims of the '002 Patent.

44. Absent a declaration of invalidity, Defendants will continue to wrongfully allege infringement of the '002 Patent against the Pegatron Plaintiffs and thereby cause them irreparable injury and damage.

45. Accordingly, the Pegatron Plaintiffs seek a judicial determination and declaration that the claims of the '002 Patent are invalid.

THIRD CLAIM

Declaratory Judgment of Non-Infringement of the '222 Patent

46. The Pegatron Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 in their entirety.

47. PMAA and AFTG allege in the Wyoming Actions that the Pegatron Plaintiffs have been and are infringing the '222 Patent, as well as inducing and contributing to the infringement of the '222 Patent by others.

48. The Pegatron Plaintiffs' products and activities have not and do not infringe, induce infringement or contribute to the infringement by others of any claim of the '222 Patent.

49. There exists, therefore, an actual and justiciable controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Pegatron Plaintiffs and the Defendants with respect to the non-infringement of the claims of the '222 Patent.

50. Absent a declaration of non-infringement, Defendants will continue to wrongfully allege infringement of the '222 Patent against the Pegatron Plaintiffs and thereby cause them irreparable injury and damage.

51. Accordingly, the Pegatron Plaintiffs seek a judicial determination and declaration that the Pegatron Plaintiffs do not infringe, induce infringement or contributorily infringe any claim of the '222 Patent.

FOURTH CLAIM

Declaratory Judgment of Invalidity of the '222 Patent

52. The Pegatron Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 and 46 through 51 in their entirety.

53. The claims of the '222 Patent are invalid for failing to meet one or more of the conditions and requirements for patentability set forth under 35 U.S.C. §§ 101, 102, 103 and/or 112.

54. There exists, therefore, an actual controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Pegatron Plaintiffs and the Defendants with respect to the invalidity of the claims of the '222 Patent.

55. Absent a declaration of invalidity, Defendants will continue to wrongfully allege infringement of the '222 Patent against the Pegatron Plaintiffs and thereby cause them irreparable injury and damage.

56. Accordingly, the Pegatron Plaintiffs seek a judicial determination and declaration that the claims of the '222 Patent are invalid.

FIFTH CLAIM

Declaratory Judgment of Non-Infringement of the '858 Patent

57. The Pegatron Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 in their entirety.

58. PMAA and AFTG allege in the Wyoming Actions that the Pegatron Plaintiffs have been and are infringing the '858 Patent, as well as inducing and contributing to the infringement of the '858 Patent by others.

59. The Pegatron Plaintiffs' products and activities have not and do not infringe, induce infringement or contribute to the infringement by others of any claim of the '858 Patent.

60. There exists, therefore, an actual and justiciable controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Pegatron Plaintiffs and the Defendants with respect to the non-infringement of the claims of the '858 Patent.

61. Absent a declaration of non-infringement, Defendants will continue to wrongfully allege infringement of the '858 Patent against the Pegatron Plaintiffs and thereby cause them irreparable injury and damage.

62. Accordingly, the Pegatron Plaintiffs seek a judicial determination and declaration that the Pegatron Plaintiffs do not infringe, induce infringement or contributorily infringe any claim of the '858 Patent.

SIXTH CLAIM

Declaratory Judgment of Invalidity of the '858 Patent

63. The Pegatron Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 and 57 through 62 in their entirety.

64. The claims of the '858 Patent are invalid for failing to meet one or more of the conditions and requirements for patentability set forth under 35 U.S.C. §§ 101, 102, 103 and/or 112.

65. There exists, therefore, an actual controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Pegatron Plaintiffs and the Defendants with respect to the invalidity of the claims of the '858 Patent.

66. Absent a declaration of invalidity, Defendants will continue to wrongfully allege infringement of the '858 Patent against the Pegatron Plaintiffs and thereby cause them irreparable injury and damage.

67. Accordingly, the Pegatron Plaintiffs seek a judicial determination and declaration that the claims of the '858 Patent are invalid.

SEVENTH CLAIM

Declaratory Judgment of Non-Infringement of the '752 Patent

68. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 in their entirety.

69. PMAA and AFTG allege in the Wyoming Actions that both the ASUSTeK Plaintiffs and the Pegatron Plaintiffs have been and are infringing the '752 Patent, as well as inducing and contributing to the infringement of the '752 Patent by others.

70. Plaintiffs' products and activities have not and do not infringe, induce infringement or contribute to the infringement by others of any claim of the '752 Patent.

71. There exists, therefore, an actual and justiciable controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the non-infringement of the claims of the '752 Patent.

72. Absent a declaration of non-infringement, Defendants will continue to wrongfully allege infringement of the '752 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

73. Accordingly, Plaintiffs seek a judicial determination and declaration that the Plaintiffs do not infringe, induce infringement or contributorily infringe any claim of the '752 Patent.

EIGHTH CLAIM

Declaratory Judgment of Invalidity of the '752 Patent

74. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 and 68 through 73 in their entirety.

75. The claims of the '752 Patent are invalid for failing to meet one or more of the conditions and requirements for patentability set forth under 35 U.S.C. §§ 101, 102, 103 and/or 112.

76. There exists, therefore, an actual controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the invalidity of the claims of the '752 Patent.

77. Absent a declaration of invalidity, Defendants will continue to wrongfully allege infringement of the '752 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

78. Accordingly, Plaintiffs seek a judicial determination and declaration that the claims of the '752 Patent are invalid.

NINTH CLAIM

Declaratory Judgment of Non-Infringement of the '475 Patent

79. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 in their entirety.

80. PMAA and AFTG allege in the Wyoming Actions that both the ASUSTeK Plaintiffs and the Pegatron Plaintiffs have been and are infringing the '475 Patent, as well as inducing and contributing to the infringement of the '475 Patent by others.

81. Plaintiffs' products and activities have not and do not infringe, induce infringement or contribute to the infringement by others of any claim of the '475 Patent.

82. There exists, therefore, an actual and justiciable controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the non-infringement of the claims of the '475 Patent.

83. Absent a declaration of non-infringement, Defendants will continue to wrongfully allege infringement of the '475 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

84. Accordingly, Plaintiffs seek a judicial determination and declaration that the Plaintiffs do not infringe, induce infringement or contributorily infringe any claim of the '475 Patent.

TENTH CLAIM

Declaratory Judgment of Invalidity of the '475 Patent

85. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 and 79 through 84 in their entirety.

86. The claims of the '475 Patent are invalid for failing to meet one or more of the conditions and requirements for patentability set forth under 35 U.S.C. §§ 101, 102, 103 and/or 112.

87. There exists, therefore, an actual controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the invalidity of the claims of the '475 Patent.

88. Absent a declaration of invalidity, Defendants will continue to wrongfully allege infringement of the '475 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

89. Accordingly, Plaintiffs seek a judicial determination and declaration that the claims of the '475 Patent are invalid.

ELEVENTH CLAIM

Declaratory Judgment of Non-Infringement of the '601 Patent

90. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 in their entirety.

91. PMAA and AFTG allege in the Wyoming Actions that both the ASUSTeK Plaintiffs and the Pegatron Plaintiffs have been and are infringing the '601 Patent, as well as inducing and contributing to the infringement of the '601 Patent by others.

92. Plaintiffs' products and activities have not and do not infringe, induce infringement or contribute to the infringement by others of any claim of the '601 Patent.

93. There exists, therefore, an actual and justiciable controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the non-infringement of the claims of the '601 Patent.

94. Absent a declaration of non-infringement, Defendants will continue to wrongfully allege infringement of the '601 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

95. Accordingly, Plaintiffs seek a judicial determination and declaration that the Plaintiffs do not infringe, induce infringement or contributorily infringe any claim of the '601 Patent.

TWELFTH CLAIM

Declaratory Judgment of Invalidity of the '601 Patent

96. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 and 90 through 95 in their entirety.

97. The claims of the '601 Patent are invalid for failing to meet one or more of the conditions and requirements for patentability set forth under 35 U.S.C. §§ 101, 102, 103 and/or 112.

98. There exists, therefore, an actual controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the invalidity of the claims of the '601 Patent.

99. Absent a declaration of invalidity, Defendants will continue to wrongfully allege infringement of the '601 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

100. Accordingly, Plaintiffs seek a judicial determination and declaration that the claims of the '601 Patent are invalid.

THIRTEENTH CLAIM

Declaratory Judgment of Non-Infringement of the '181 Patent

101. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 in their entirety.

102. PMAA and AFTG allege in the Wyoming Actions that both the ASUSTeK Plaintiffs and the Pegatron Plaintiffs have been and are infringing the '181 Patent, as well as inducing and contributing to the infringement of the '181 Patent by others.

103. Plaintiffs' products and activities have not and do not infringe, induce infringement or contribute to the infringement by others of any claim of the '181 Patent.

104. There exists, therefore, an actual and justiciable controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the non-infringement of the claims of the '181 Patent.

105. Absent a declaration of non-infringement, Defendants will continue to wrongfully allege infringement of the '181 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

106. Accordingly, Plaintiffs seek a judicial determination and declaration that the Plaintiffs do not infringe, induce infringement or contributorily infringe any claim of the '181 Patent.

FOURTEENTH CLAIM

Declaratory Judgment of Invalidity of the '181 Patent

107. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 and 101 through 106 in their entirety.

108. The claims of the '181 Patent are invalid for failing to meet one or more of the conditions and requirements for patentability set forth under 35 U.S.C. §§ 101, 102, 103 and/or 112.

109. There exists, therefore, an actual controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the invalidity of the claims of the '181 Patent.

110. Absent a declaration of invalidity, Defendants will continue to wrongfully allege infringement of the '181 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

111. Accordingly, Plaintiffs seek a judicial determination and declaration that the claims of the '181 Patent are invalid.

FIFTEENTH CLAIM

Declaratory Judgment of Non-Infringement of the '203 Patent

112. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 in their entirety.

113. PMAA and AFTG allege in the Wyoming Actions that both the ASUSTeK Plaintiffs and the Pegatron Plaintiffs have been and are infringing the '203 Patent, as well as inducing and contributing to the infringement of the '203 Patent by others.

114. Plaintiffs' products and activities have not and do not infringe, induce infringement or contribute to the infringement by others of any claim of the '203 Patent.

115. There exists, therefore, an actual and justiciable controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the non-infringement of the claims of the '203 Patent.

116. Absent a declaration of non-infringement, Defendants will continue to wrongfully allege infringement of the '203 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

117. Accordingly, Plaintiffs seek a judicial determination and declaration that the Plaintiffs do not infringe, induce infringement or contributorily infringe any claim of the '203 Patent.

SIXTEENTH CLAIM

Declaratory Judgment of Invalidity of the '203 Patent

118. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 and 112 through 117 in their entirety.

119. The claims of the '203 Patent are invalid for failing to meet one or more of the conditions and requirements for patentability set forth under 35 U.S.C. §§ 101, 102, 103 and/or 112.

120. There exists, therefore, an actual controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the invalidity of the claims of the '203 Patent.

121. Absent a declaration of invalidity, Defendants will continue to wrongfully allege infringement of the '203 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

122. Accordingly, Plaintiffs seek a judicial determination and declaration that the claims of the '203 Patent are invalid.

SEVENTEENTH CLAIM

Declaratory Judgment of Non-Infringement of the '207 Patent

123. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 in their entirety.

124. PMAA and AFTG allege in the Wyoming Actions that both the ASUSTeK Plaintiffs and the Pegatron Plaintiffs have been and are infringing the '207 Patent, as well as inducing and contributing to the infringement of the '207 Patent by others.

125. Plaintiffs' products and activities have not and do not infringe, induce infringement or contribute to the infringement by others of any claim of the '207 Patent.

126. There exists, therefore, an actual and justiciable controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the non-infringement of the claims of the '207 Patent.

127. Absent a declaration of non-infringement, Defendants will continue to wrongfully allege infringement of the '207 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

128. Accordingly, Plaintiffs seek a judicial determination and declaration that the Plaintiffs do not infringe, induce infringement or contributorily infringe any claim of the '207 Patent.

EIGHTEENTH CLAIM

Declaratory Judgment of Invalidity of the '207 Patent

129. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 and 123 through 128 in their entirety.

130. The claims of the '207 Patent are invalid for failing to meet one or more of the conditions and requirements for patentability set forth under 35 U.S.C. §§ 101, 102, 103 and/or 112.

131. There exists, therefore, an actual controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the invalidity of the claims of the '207 Patent.

132. Absent a declaration of invalidity, Defendants will continue to wrongfully allege infringement of the '207 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

133. Accordingly, Plaintiffs seek a judicial determination and declaration that the claims of the '207 Patent are invalid.

NINETEENTH CLAIM

Declaratory Judgment of Non-Infringement of the '802 Patent

134. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 in their entirety.

135. PMAA and AFTG allege in the Wyoming Actions that both the ASUSTeK Plaintiffs and the Pegatron Plaintiffs have been and are infringing the '802 Patent, as well as inducing and contributing to the infringement of the '802 Patent by others.

136. Plaintiffs' products and activities have not and do not infringe, induce infringement or contribute to the infringement by others of any claim of the '802 Patent.

137. There exists, therefore, an actual and justiciable controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the non-infringement of the claims of the '802 Patent.

138. Absent a declaration of non-infringement, Defendants will continue to wrongfully allege infringement of the '802 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

139. Accordingly, Plaintiffs seek a judicial determination and declaration that the Plaintiffs do not infringe, induce infringement or contributorily infringe any claim of the '802 Patent.

TWENTIETH CLAIM

Declaratory Judgment of Invalidity of the '802 Patent

140. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 and 134 through 139 in their entirety.

141. The claims of the '802 Patent are invalid for failing to meet one or more of the conditions and requirements for patentability set forth under 35 U.S.C. §§ 101, 102, 103 and/or 112.

142. There exists, therefore, an actual controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the invalidity of the claims of the '802 Patent.

143. Absent a declaration of invalidity, Defendants will continue to wrongfully allege infringement of the '802 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

144. Accordingly, Plaintiffs seek a judicial determination and declaration that the claims of the '802 Patent are invalid.

TWENTY-FIRST CLAIM

Declaratory Judgment of Non-Infringement of the '804 Patent

145. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 in their entirety.

146. PMAA and AFTG allege in the Wyoming Actions that both the ASUSTeK Plaintiffs and the Pegatron Plaintiffs have been and are infringing the '804 Patent, as well as inducing and contributing to the infringement of the '804 Patent by others.

147. Plaintiffs' products and activities have not and do not infringe, induce infringement or contribute to the infringement by others of any claim of the '804 Patent.

148. There exists, therefore, an actual and justiciable controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the non-infringement of the claims of the '804 Patent.

149. Absent a declaration of non-infringement, Defendants will continue to wrongfully allege infringement of the '804 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

150. Accordingly, Plaintiffs seek a judicial determination and declaration that the Plaintiffs do not infringe, induce infringement or contributorily infringe any claim of the '804 Patent.

TWENTY-SECOND CLAIM

Declaratory Judgment of Invalidity of the '804 Patent

151. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 and 145 through 150 in their entirety.

152. The claims of the '804 Patent are invalid for failing to meet one or more of the conditions and requirements for patentability set forth under 35 U.S.C. §§ 101, 102, 103 and/or 112.

153. There exists, therefore, an actual controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the invalidity of the claims of the '804 Patent.

154. Absent a declaration of invalidity, Defendants will continue to wrongfully allege infringement of the '804 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

155. Accordingly, Plaintiffs seek a judicial determination and declaration that the claims of the '804 Patent are invalid.

TWENTY-THIRD CLAIM

Declaratory Judgment of Non-Infringement of the '766 Patent

156. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 in their entirety.

157. PMAA and AFTG allege in the Wyoming Actions that both the ASUSTeK Plaintiffs and the Pegatron Plaintiffs have been and are infringing the '766 Patent, as well as inducing and contributing to the infringement of the '766 Patent by others.

158. Plaintiffs' products and activities have not and do not infringe, induce infringement or contribute to the infringement by others of any claim of the '766 Patent.

159. There exists, therefore, an actual and justiciable controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the non-infringement of the claims of the '766 Patent.

160. Absent a declaration of non-infringement, Defendants will continue to wrongfully allege infringement of the '766 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

161. Accordingly, Plaintiffs seek a judicial determination and declaration that the Plaintiffs do not infringe, induce infringement or contributorily infringe any claim of the '766 Patent.

TWENTY-FOURTH CLAIM

Declaratory Judgment of Invalidity of the '766 Patent

162. Plaintiffs incorporate by reference herein the allegations set forth in paragraphs 1 through 34 and 156 through 161 in their entirety.

163. The claims of the '766 Patent are invalid for failing to meet one or more of the conditions and requirements for patentability set forth under 35 U.S.C. §§ 101, 102, 103 and/or 112.

164. There exists, therefore, an actual controversy, within the meaning of 28 U.S.C. §§ 2201 and 2202 between the Plaintiffs and the Defendants with respect to the invalidity of the claims of the '766 Patent.

165. Absent a declaration of invalidity, Defendants will continue to wrongfully allege infringement of the '766 Patent against the Plaintiffs and thereby cause them irreparable injury and damage.

166. Accordingly, Plaintiffs seek a judicial determination and declaration that the claims of the '766 Patent are invalid.

PRAYER FOR RELIEF

Wherefore, Plaintiffs ASUSTeK Computer Inc., ASUS Computer International, Pegatron Corporation, Pegatron Technology Service Inc., Unihan Corporation, ASRock Incorporated, and ASRock America, Inc. demand judgment against Defendants Phillip M. Adams, AFTG-TG

L.L.C., and Phillip M. Adams & Associates, L.L.C., and respectfully request that this Court enter the following Orders:

A. Declaring that the Pegatron Plaintiffs do not infringe any claim of the Adams Patents and that the ASUSTeK Plaintiffs do not infringe any claim of the '752, '475, '601, '181, '203, '207, '802, '804, or '766 Patents.

B. Declaring that the claims of the Adams Patents are invalid;

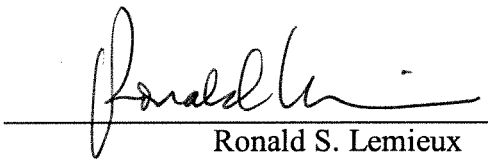
C. Declaring that Defendants and their officers, employees, agents, alter egos, attorneys, and any persons in active concert or participation with them be restrained and enjoined from further prosecuting or instituting any action against each of the Plaintiffs claiming that the Adams Patents are valid, enforceable, or infringed, or from representing that Plaintiffs' products and/or services infringe any of the Adams Patents;

D. A judgment declaring this case exceptional under 35 U.S.C. § 285 and awarding Plaintiffs their attorneys' fees and costs in connection with this case; and

E. Awarding Plaintiffs such other and further relief as this Court deems just and proper.

Dated: January 12, 2011

COOLEY LLP
RONALD S. LEMIEUX
VID R. BHAKAR
SHANÉE Y. W. NELSON



Ronald S. Lemieux

Attorneys for Plaintiffs
ASUSTeK Computer Inc., ASUS Computer International, Pegatron Corporation, Pegatron Technology Service Inc., Unihan Corporation, ASRock Incorporated, and ASRock America, Inc.

EXHIBIT A

FILED
U.S. DISTRICT COURT
DISTRICT OF WYOMING
OCT 18 2010
Stephan Harris, Clerk
Cheyenne

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Attorneys for Plaintiffs

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF WYOMING

AFTG-TG, L.L.C., a Wyoming limited liability company, PHILLIP M. ADAMS & ASSOCIATES, L.L.C., a Utah limited liability company, Plaintiffs, vs. NUVOTON TECHNOLOGY CORPORATION, a Taiwan corporation, NUVOTON TECHNOLOGY CORPORATION AMERICA, a California corporation, PEGATRON CORPORATION, a Taiwan corporation, PEGATRON TECHNOLOGY SERVICE INC., an Indiana corporation, UNIHAN, a Taiwan corporation, Defendants.	**COMPLAINT FOR PATENT INFRINGEMENT AND TRADE SECRET THEFT** Civil No. 10-CV-227-F Judge: Freudenthal

Plaintiffs AFTG-TG, L.L.C. ("AFTG") and Phillip M. Adams & Associates, L.L.C. ("Adams") brings this action for the infringement of multiple U.S. Patents. This is a claim for patent infringement and arises under the patent laws of the United States, Title 35 of the United States Code. This Court has exclusive jurisdiction over the subject matter of

this Complaint under 28 U.S.C. § 1338(a). Venue is proper in this District under 28 U.S.C. §§ 1391(c)-(d) and 1400(b).

PLAINTIFFS

1. Adams is a Utah limited liability company with its principle place of business now in Wyoming. Adams owns all right, title and interest in and has standing to sue for infringement of the United States patents identified below:

- 5,983,002 titled "Defective Floppy Diskette Controller Detection Apparatus and Method" ("the '002 patent");
- 6,401,222 titled "Defective Floppy Diskette Controller Detection Apparatus and Method" ("the '222 patent");
- 6,687,858 entitled "Software-Hardware Welding System" ("the '858 patent");
- 7,251,752 titled "Computerized Product Improvement Apparatus and Method" ("the '752 patent");
- 7,069,475 entitled "Software-Hardware Welding System" ("the '475 patent"); and
- 7,409,601 entitled "Read-Write Function Separation Apparatus and Method" ("the '601 patent");

(collectively "Adams patents-in-suit").

2. AFTG is a Wyoming limited liability company with its principal place of business in Wyoming. AFTG owns all right, title and interest in and has standing to sue for infringement of the United States patents identified below:

- 6,691,181 titled "Programmatic Time-Gap Defect Detection Apparatus and Method" ("the '181 patent");

- 7,249,203 titled "Programmatic Time-Gap Defect Detection Apparatus and Method" ("the '203 patent");
- 7,472,207 titled "Optimized-Incrementing, Time-Gap Defect Detection Apparatus and Method" ("the '207 patent");
- 6,842,802 titled "Programmatic Time-Gap Defect Correction Apparatus and Method" ("the '802 patent");
- 7,366,804 titled "Programmatic Time-Gap Defect Correction Apparatus and Method" ("the '804 patent"); and
- 7,653,766 titled "Time-Gap Defect Detection Apparatus and Method" ("the '766 patent");

(collectively the "AFTG patents-in-suit"). The Adams patents-in-suit and the AFTG patents-in-suit are collectively referred to hereinafter as the "Patents-in-Suit".

3. Dr. Phillip M. Adams heads plaintiff Adams and AFTG, and resides in Wyoming. He has a Ph.D. in applied computer science, a D.Sc. in engineering and over 30 years of experience in the computer industry. Dr. Adams has served on the faculty of major universities and holds numerous patents. In the late 1980s, Dr. Adams characterized a defect in the NEC 765A floppy disk controller (FDC) present in most personal computers at the time. This defect caused the random destruction or corruption of data without proper notification to the user that data had been destroyed or corrupted.

4. The random destruction or corruption of data in computers is a serious, and potentially cataclysmic, problem. Computers are used throughout society and the data integrity of computers is the lifeblood of the information age. The public relies

upon the integrity of data stored by computers and exchanged between them to support virtually all aspects of society, including the multitude of financial transactions, the accurate and effective diagnoses and treatment of illnesses and the proper design and construction of automobiles, aircraft, bridges, dams, office buildings and various other structures and devices.

5. The scope and seriousness of the FDC-related defects characterized by Dr. Adams were illustrated by the $2.1 billion *Toshiba* class-action settlement in the Eastern District of Texas. In addition to the *Toshiba* class-action settlement, the United States Government settled False Claims Act claims against Toshiba for $33.5 million. The State of California settled California State False Claims Act claims against Toshiba for $33 million. Also, several billion-dollar class-action lawsuits are presently pending against different computer companies in various federal and state courts because of such defects built into various computers.

6. In the 20 plus years since Dr. Adams characterized the NEC 765A defect, Dr. Adams has discovered related data corruption defects and has devoted thousands of hours to developing solutions, alerting various federal and state governments, computer companies and private purchasers to such defects and assisting computer manufacturers to acknowledge and remedy these defects. In addition, Dr. Adams has developed several patented computer technologies that address such defects. First, he developed patented computer technology (both hardware and software) that detect which computers are defective.

Second, he developed patented solutions (both hardware and software) that resolve the defects found in such computers.

7. Hewlett Packard (one of the world's leaders in personal computers) obtained a license from Adams, and then placed Adams' solution on the Internet for all its customers throughout the world. Thus, any Hewlett Packard customer could go to this Internet website, download the solution and fully repair such defects in his or her computer. The website included notice of Adams' patent. Compaq (before it merged with Hewlett Packard) also obtained a license under Dr. Adams' patent.

8. In May of 2005, in compliance with the terms of the Hewlett Packard and Compaq license agreements, Adams was forced to file suit against numerous companies in the computer industry for the theft of his trade secrets and infringement of patented technology owned by Adams (the "Winbond Litigation"). Previously, Adams had been involved and occupied in litigation with Gateway Computer Company from 2002 until 2006 when Gateway settled on the first day of trial. Adams has been involved in litigation since at least 2002 against computer companies such as Gateway, Sony, Dell, IBM, Lenovo, Quanta, Fujitsu, and Dell.

9. Through the course of the Winbond Litigation it was discovered that Winbond's infringing chips had been distributed throughout the computer industry and had been knowingly incorporated into the Defendants products.

10. In May 2010 Adams retained the firm of Quinn Dumke LLC to approach each of the Defendants, under F.R.E. 408, with the hope of entering into a mutually acceptable agreement to address the suspected patent infringement without costly litigation.

11. Instead of entering into fruitful negotiations concerning what was then thought to be clear liability for infringement, Defendants instead determined that it would be more beneficial to either wait for the determination of infringement in the Winbond Litigation, or request that Adams supply claim charts and enter into a level of discovery more suited for Markman hearings during litigation.

12. Throughout the course of the Winbond Litigation many companies that were party to the suit entered into settlement agreements with Adams, but the defendants Winbond Electronics Corporation ("Winbond"), ASUSTek Computer, Inc., ASUS Computer International, Micro-Star International, and Micro-Star USA obstinately maintained a position of non-infringement.

13. Defendant ITE Tech, Inc. ("ITE") has had a default judgment of patent infringement and misappropriation of trade secrets entered and is awaiting the Court's determination of jurisdiction prior to providing enforcement.

14. On October 5, 2010 a jury of 12 unanimously determined that Winbond had infringed all asserted claims of Adams '002 patent.

15. As a result of the verdict and default judgment it is clear that all Winbond, Nuvoton (Winbond's wholly owned I/O chip subsidiary), or ITE super I/O chips with an

Opus International based FDC core ("Infringing Chips") infringe the patent in suit. Additionally, it is believed that chips from VIA Technologies, Inc. ("VIA"), Silicon Integrated Systems Corporation ("SIS"), and Standard Microsystems Corp. ("SMSC") use the same infringing architecture in their chips ("Dependent Chips"), which have been incorporated into the defendants' products.

16. The Defendants' knowing and intentional use, manufacture and/or importation of infringing methods, articles of manufacture, and products subject them to, at a minimum, liability under 35 U.S.C § 271 (a), (b), (c) and (g).

DEFENDANTS

17. Nuvoton Technology Corporation is a company organized under the laws of Taiwan, with a place of business at No. 4 , Creation Rd. III, Hsinchu Science Park, Taiwan, R.O.C.; and all U.S. subsidiaries.

18. Nuvoton Technology Corporation America is a Delaware corporation with a place of business at 2727 N. First St., San Jose, California 95134, U.S.A. (Nuvoton Technology Corporation and Nuvoton Technology Corporation America are collectively referred to as "Nuvoton").

19. Pegatron Corporation is a company organized under the laws of Taiwan, with a place of business at 5F, No. 76, Ligong St., Beitou, Taipei, Taiwan, R.O.C.; and all U.S. subsidiaries.

20. Pegatron Technology Service Inc. is an Indiana corporation with a place of business at 121 River Ridge Circle, Jeffersonville, Indiana 47130, U.S.A.

21. Unihan is a company organized under the laws of Taiwan, with a place of business at No 150 Lide Road, Beitou District, Taipei City, 112, Taiwan, R.O.C. (All defendant parties are collectively referred to as "Defendants"). (Pegatron Corporation, Pegatron Technology Service Inc. and Unihan are collectively referred to as "Pegatron").

COUNT I
ACTS OF PATENT INFRINGEMENT

22. Defendants have infringed various claims of each of the patents-in-suit in violation of 35 U.S.C. § 271 through, among other activities, the manufacture, use, importation, sale and/or offer for sale of computer chips, motherboards, computers and other products, as well as using infringing methods including but not limited to testing of Defendants' products as a part of the manufacturing process. In addition to their direct infringement, Defendants have also knowingly and intentionally induced others to infringe under 35 U.S.C. § 271(b) (such as its customers and end-users in this judicial district and throughout the United States) by intentionally aiding, assisting and encouraging their infringement, and defendants have knowingly contributed to the infringement of others under 35 U.S.C. § 271(c) (such as its customers and end-users in this judicial district and throughout the United States) by supplying their technical know-how and infringing computer chips and motherboards (which are non-staple articles of commerce having no substantial non-infringing use). The infringement that has occurred is at least of the following claims of the following patents:

Patent Number	Claims
5,983,002	1-6; 8-15
6,401,222	1-7; 9-16; 18-20
6,687,858	1; 3-4
7,251,752	1; 3;
6,691,181	1-3; 10-11; 12-14
7,249,203	1; 10-11; 12-14
7,472,207	1; 10-12
7,069,475	6; 14-17; 21; 23
7,409,601	1-4; 6-7; 9-12; 14-15
6,842,802	1-29
7,366,804	1-30
7,653,766	1-19

NOTICE AND WILLFULNESS

23. On information and belief, all Defendants have had actual and/or constructive notice of their infringement of the patents-in-suit, including actual pre-complaint notice.

24. On information and belief, all Defendants' infringement has been willful and deliberate as to the patents-in-suit and has occurred with the knowledge that chips and cores of Winbond and ITE design have at a minimum infringed Adams' '002 patent in violation of 35 U.S.C. § 284. Defendants' infringement has injured and will continue to injure Adams, unless and until this Court enters an injunction prohibiting further infringement and, specifically, enjoining further manufacture, use, importation, offers for sale and/or sale of Defendants' products and/or services that contain infringing technology; including but not limited to Winbond's and/or ITE's core; or fall within the scope of any claim of any of the patents-in-suit.

COUNT II
MISAPPROPRIATION OF TRADE SECRETS

25. Plaintiff realleges and incorporates Paragraphs 1-24 above as Paragraphs 1-24 of Count II.

26. In a prior lawsuit in the Tenth Circuit judicial district of Utah, Adams v. Gateway Inc., No. 2:02-CV-01065, Adams discovered that Gateway had spoliated evidence and improperly attempted to hide damaging documents by asserting that the damaging documents were privileged. Thereafter, the court ruled that Gateway's assertions of privilege were improper and sanctioned Gateway for improperly asserting privilege in an effort to hide and cover up damaging documents. Adams v. Gateway, 2003 WL 23787856 (D. Utah 2003), *affirmed and ordering production of documents on September 14, 2004*, 2004 WL 2061884 (D. Utah 2004)

27. The court thereafter compelled Gateway to produce certain allegedly "privileged" documents demonstrating that ASUS, Winbond and MSI had obtained an unauthorized and stolen copy of Adams' patented and trade secret technology in 2000, and that ASUS, Winbond and ITE were using the stolen copy of Adams' technology in their manufacture, assembly, and testing of computer products.

28. In such documents, Winbond, ASUS and ITE admitted that they had obtained copies of Adams' "Detector" programs, proprietary and confidential software programs which Dr. Adams invented. Furthermore, Winbond and Asus admitted to reverse engineering Adams' Detector programs to determine and distribute Adams

trade secrets. The Detector programs allow a user to determine defects in a computer, and the documents revealed that Winbond, ASUS and MSI actually used the Detector programs in the testing and manufacturing FDC chips and motherboards that contain them.

29. Winbond and ASUS conspired to pirate Adams' Detector programs. ASUS obtained Adams' Detector testing software and used it to produce its own test utility or software (which it called 1fdc.exe and w2sec.exe) and test its motherboards and Winbond's chops. Internal e-mails and notes that Winbond produced during the Gateway litigation clearly demonstrate that ASUS worked closely with Winbond in pirating and using Adams software and modifying Winbond chips. ITE also misappropriated Adams software and used it to test and modify its chips.

30. The Detector programs contained trade secrets of Adams, including, among other things, a specific method to allow the detection process to be performed on any byte in a sector. Adams maintained the Detector programs in confidence, and when it licensed the programs, Adams required in writing that its licensees keep the programs confidential. Adams maintained the confidentiality of its Detector programs' trade secrets until the aforementioned '222 patent issued on June 4, 2002. Until that time, Adams' Detector programs' trade secrets were valuable; for example; Compaq Computers licensed the Adams Detector programs, among other patented technology, for $31.5 million.

31. Through the course of the Winbond Litigation it was determined that additional companies, the Defendants, were knowingly using Adams' proprietary technology that was protected by trade secret. As a result of these companies knowing use of the material they are liable for trade secret misappropriation.

32. Adams Detector programs were clearly labeled as the property of Adams, and the current defendants knew, or had reason to know the property to be misappropriated trade secret material. Defendants also knew or had reason to know that the Adams Detector programs were acquired by improper means.

33. Defendants' conduct violated the Wyoming trade secret common law.

PRAYER FOR RELIEF

WHEREFORE, Adams respectfully requests this Court enter judgment against Defendants and against their subsidiaries, affiliates, agents, servants, employees and all persons in active concert or participation with them granting the following relief:

A) An award of damages adequate to compensate Adams for the patent infringement by Defendants that has occurred, together with prejudgment interest from the date infringement of each respective patents-in-suit began together with costs, said damages to be no less than a reasonable royalty;

B) An award to Adams of all damages so determined for willful infringement, including an increase of the compensatory damages by up to three times, in accordance with 35 U.S.C. § 284;

C) A finding that this case is exceptional and an award to Adams of all remedies available under 35 U.S.C. § 285, including the costs of this action and reasonable attorney's fees;

D) A permanent injunction prohibiting further infringement, inducement and contributory infringement of the patents-in-suit;

E) For its trade secret misappropriation claim against Defendants, an award of all appropriate unjust enrichment damages, including the disgorgement of all profits denied from the misappropriation; and

F) Such other and further relief as this Court or a jury may deem proper and/or just.

DATED: October 18, 2010.

DRAY, THOMSON AND DYEKMAN, PC

By: Randall B. Reed

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Attorneys for Plaintiffs

EXHIBIT B

FILED
U.S. DISTRICT COURT
DISTRICT OF WYOMING

OCT 18 2010

Stephan Harris, Clerk
Cheyenne

Randall B. Reed, Wyo. Bar No. 5-2863
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Attorneys for Plaintiffs

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF WYOMING

AFTG-TG, L.L.C., a Wyoming limited liability company, PHILLIP M. ADAMS & ASSOCIATES, L.L.C., a Utah limited liability company, Plaintiffs, vs. WINBOND ELECTRONICS CORPORATION, a Taiwan corporation, WINBOND ELECTRONICS CORPORATION AMERICA, a California corporation, ASUSTEK COMPUTER, INC., a Taiwan corporation, ASUS COMPUTER INTERNATIONAL, a California corporation, MICRO-STAR INTERNATIONAL CORPORATION, LTD., a Taiwan corporation, MSI COMPUTER CORPORATION, a California corporation. Defendants.	**COMPLAINT FOR PATENT INFRINGEMENT** Civil No. 10-CV-229-F Judge: Freudenthal

Plaintiffs AFTG-TG, L.L.C. ("AFTG") and Phillip M. Adams & Associates, L.L.C. ("Adams") brings this action for the infringement of multiple U.S. Patents. This is a claim for patent infringement and arises under the patent laws of the United States, Title 35 of the United States Code. This Court has exclusive jurisdiction over the subject matter of this Complaint under 28 U.S.C. § 1338(a). Venue is proper in this District under 28 U.S.C. §§ 1391(c)-(d) and 1400(b).

PLAINTIFFS

1. Adams is a Utah limited liability company with its principle place of business now in Wyoming. Adams owns all right, title and interest in and has standing to sue for infringement of the United States patents identified below:

- 7,251,752 titled "Computerized Product Improvement Apparatus and Method" ("the '752 patent");
- 7,069,475 entitled "Software-Hardware Welding System" ("the '475 patent"); and
- 7,409,601 entitled "Read-Write Function Separation Apparatus and Method" ("the '601 patent");

(collectively "Adams patents-in-suit").

2. AFTG is a Wyoming limited liability company with its principal place of business in Wyoming. AFTG owns all right, title and interest in and has standing to sue for infringement of the United States patents identified below:

- 6,691,181 titled "Programmatic Time-Gap Defect Detection Apparatus and Method" ("the '181 patent");

- 7,249,203 titled "Programmatic Time-Gap Defect Detection Apparatus and Method" ("the '203 patent");
- 7,472,207 titled "Optimized-Incrementing, Time-Gap Defect Detection Apparatus and Method" ("the '207 patent");
- 6,842,802 titled "Programmatic Time-Gap Defect Correction Apparatus and Method" ("the '802 patent");
- 7,366,804 titled "Programmatic Time-Gap Defect Correction Apparatus and Method" ("the '804 patent"); and
- 7,653,766 titled "Time-Gap Defect Detection Apparatus and Method" ("the '766 patent");

(collectively the "AFTG patents-in-suit"). The Adams patents-in-suit and the AFTG patents-in-suit are collectively referred to hereinafter as the "Patents-in-Suit".

3. Dr. Phillip M. Adams heads plaintiff Adams and AFTG, and resides in Wyoming. He has a Ph.D. in applied computer science, a D.Sc. in engineering and over 30 years of experience in the computer industry. Dr. Adams has served on the faculty of major universities and holds numerous patents. In the late 1980s, Dr. Adams characterized a defect in the NEC 765A floppy disk controller (FDC) present in most personal computers at the time. This defect caused the random destruction or corruption of data without proper notification to the user that data had been destroyed or corrupted.

4. The random destruction or corruption of data in computers is a serious, and potentially cataclysmic, problem. Computers are used throughout society and the data integrity of computers is the lifeblood of the information age. The public relies

upon the integrity of data stored by computers and exchanged between them to support virtually all aspects of society, including the multitude of financial transactions, the accurate and effective diagnoses and treatment of illnesses and the proper design and construction of automobiles, aircraft, bridges, dams, office buildings and various other structures and devices.

5. The scope and seriousness of the FDC-related defects characterized by Dr. Adams were illustrated by the $2.1 billion *Toshiba* class-action settlement in the Eastern District of Texas. In addition to the *Toshiba* class-action settlement, the United States Government settled False Claims Act claims against Toshiba for $33.5 million. The State of California settled California State False Claims Act claims against Toshiba for $33 million. Also, several billion-dollar class-action lawsuits are presently pending against different computer companies in various federal and state courts because of such defects built into various computers.

6. In the 20 plus years since Dr. Adams characterized the NEC 765A defect, Dr. Adams has discovered related data corruption defects and has devoted thousands of hours to developing solutions, alerting various federal and state governments, computer companies and private purchasers to such defects and assisting computer manufacturers to acknowledge and remedy these defects. In addition, Dr. Adams has developed several patented computer technologies that address such defects. First, he developed patented computer technology (both hardware and software) that detect which computers are defective.

Second, he developed patented solutions (both hardware and software) that resolve the defects found in such computers.

7. Hewlett Packard (one of the world's leaders in personal computers) obtained a license from Adams, and then placed Adams' solution on the Internet for all its customers throughout the world. Thus, any Hewlett Packard customer could go to this Internet website, download the solution and fully repair such defects in his or her computer. The website included notice of Adams' patent. Compaq (before it merged with Hewlett Packard) also obtained a license under Dr. Adams' patents.

8. In May of 2005, in compliance with the terms of the Hewlett Packard and Compaq license agreements, Adams was forced to file suit against numerous companies in the computer industry for the theft of his trade secrets and infringement of patented technology owned by Adams (the "Winbond Litigation"). Previously, Adams had been involved and occupied in litigation with Gateway Computer Company from 2002 until 2006 when Gateway settled on the first day of trial. Adams has been involved in litigation since at least 2002 against computer companies such as Gateway, Sony, Dell, IBM, Lenovo, Quanta, Fujitsu, and Dell.

9. Subsequent to the initiation of the Winbond Litigation, additional patents concerning the defects in FDC's and other I/O controllers were issued to Adams and Adams has determined that Defendants are infringing these patents.

The Defendants' knowing and intentional use, manufacture and/or importation of infringing methods, articles of manufacture, and products subject them to, at a minimum, liability under 35 U.S.C § 271 (a), (b), (c) and (g).

DEFENDANTS

10. Winbond Electronics Corporation is a company organized under the laws of Taiwan, with a place of business at No. 4, Creation Rd. 3, Science-Based Industrial Park, Hsinchu, 300, Taiwan, R.O.C.; and all U.S. subsidiaries. (Winbond Electronics Corporation, Winbond Electronics Corporation America, Nuvoton Technology Corp. and Nuvoton Technology Corporation America collectively referred to as "Winbond")

11. Winbond Electronics Corporation America is a California corporation with a place of business at 2727 N. 1st Street, San Jose, California 95134, U.S.A.

12. ASUSTeK Computer, Inc. is a Taiwanese corporation with its principal place of business at No. 150 Le-Te Road, Peitou, Taipei Taiwan, R.O.C.

13. ASUS Computer International is a California corporation with its principal place of business at 44370 Nobel Drive, Fremont, California 94538. (ASUSTeK Computer, Inc. and ASUS Computer International collectively referred to as "ASUS").

14. Micro-Star International Corporation, Ltd. is a company organized under the laws of Taiwan, with a place of business at 69 Li-De St., Jung-He City, Taiwan, R.O.C.; and all U.S. subsidiaries. (Micro-Star International Corporation, Ltd. and MSI Computer Corporation are collectively referred to as "MSI").

15. MSI Computer Corporation is a California corporation with a place of business at 901 Canada Ct., City of Industry, California 91748, U.S.A. (All defendant parties are collectively referred to as "Defendants").

COUNT I
ACTS OF PATENT INFRINGEMENT

16. Defendants have infringed various claims of each of the patents-in-suit in violation of 35 U.S.C. § 271 through, among other activities, the manufacture, use, importation, sale and/or offer for sale of computer chips, motherboards, computers and other products, as well as using infringing methods including but not limited to testing of Defendants' products as a part of the manufacturing process. In addition to their direct infringement, Defendants have also knowingly and intentionally induced others to infringe under 35 U.S.C. § 271(b) (such as its customers and end-users in this judicial district and throughout the United States) by intentionally aiding, assisting and encouraging their infringement, and defendants have knowingly contributed to the infringement of others under 35 U.S.C. § 271(c) (such as its customers and end-users in this judicial district and throughout the United States) by supplying their technical know-how and infringing computer chips and motherboards (which are non-staple articles of commerce having no substantial non-infringing use). The infringement that has occurred is at least of the following claims of the following patents:

Patent Number	Claims
7,251,752	1; 3;
6,691,181	1-3; 10-11; 12-14
7,249,203	1; 10-11; 12-14
7,472,207	1; 10-12
7,069,475	6; 14-17; 21; 23
7,409,601	1-4; 6-7; 9-12; 14-15
6,842,802	1-29
7,366,804	1-30
7,653,766	1-19

NOTICE AND WILLFULNESS

17. On information and belief, all Defendants have had actual and/or constructive notice of their infringement of the patents-in-suit, including actual pre-complaint notice.

18. On information and belief, all Defendants' infringement has been willful and deliberate as to the patents-in-suit and has occurred with knowledge of, at a minimum, the '002 patent the Winbond chips and cores have infringed, in violation of 35 U.S.C. § 284. Defendants' infringement has injured and will continue to injure Adams, unless and until this Court enters an injunction prohibiting further infringement and, specifically, enjoining further manufacture, use, importation, offers for sale and/or sale of Defendants' products and/or services that contain infringing technology; including but not limited to Winbond's and/or ITE's core; or fall within the scope of any claim of any of the patents-in-suit.

PRAYER FOR RELIEF

WHEREFORE, Adams respectfully requests this Court enter judgment against Defendants and against their subsidiaries, affiliates, agents, servants, employees and all persons in active concert or participation with them granting the following relief:

A) An award of damages adequate to compensate Adams for the patent infringement by Defendants that has occurred, together with prejudgment interest from the date infringement of each respective patents-in-suit began together with costs, said damages to be no less than a reasonable royalty;

B) An award to Adams of all damages so determined for willful infringement, including an increase of the compensatory damages by up to three times, in accordance with 35 U.S.C. § 284;

C) A finding that this case is exceptional and an award to Adams of all remedies available under 35 U.S.C. § 285, including the costs of this action and reasonable attorney's fees;

D) A permanent injunction prohibiting further infringement, inducement and contributory infringement of the patents-in-suit;

E) Such other and further relief as this Court may deem proper and/or just.

DATED: October 18, 2010

DRAY, THOMSON AND DYEKMAN, PC

By: Randall B. Reed

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EXHIBIT C

ORIGINAL

FILED
U.S. DISTRICT COURT
DISTRICT OF WYOMING

OCT 18 2010

Stephan Harris, Clerk
Cheyenne

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Attorneys for Plaintiffs

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF WYOMING

AFTG-TG, L.L.C., a Wyoming limited liability company, PHILLIP M. ADAMS & ASSOCIATES, L.L.C., a Utah limited liability company,

Plaintiffs,

vs.

GIGABYTE TECHNOLOGY CO. LTD., a Taiwan corporation, GIGABYTE GLOBAL BUSINESS CORPORATION, a California corporation, ELITEGROUP COMPUTER SYSTEM CO., LTD, a Taiwan corporation, ELITEGROUP COMPUTER SYSTEMS, INC., a California corporation, UNIVERSAL SCIENTIFIC INDUSTRIAL, a Taiwan corporation, JETWAY COMPUTER CORP., a California Corporation JETWAY INFORMATION CO., LTD, a Taiwan corporation, BIOSTAR MICROTECH INTERNATIONAL CORP., a Taiwan corporation, BIOSTAR MICROTECH (U.S.A.) CORP., a California corporation, AOPEN INC., a Taiwan corporation, AOPEN AMERICA INC., a California Corporation, AVALUE TECHNOLOGY, INC., a Taiwan

COMPLAINT FOR PATENT INFRINGEMENT

Civil No. 10-CV-228-J

Judge: Johnson

corporation, AVALUE TECHNOLOGY INC., a New Jersey corporation, DFI INC., a Taiwan corporation, DFI SAN JOSE INC., a California corporation, DFI-ACP, a Taiwan corporation, ITOX LLC, a New Jersey limited liability company, DFI TECHNOLOGIES LLC, a California limited liability company, FIRST INTERNATIONAL COMPUTER, INC., a Taiwan corporation, FIC USA, a California corporation, MITAC INTERNATIONAL CORP., a Taiwan corporation, SHUTTLE INC., a Taiwan corporation, SHUTTLE INTERNATIONAL INC., a California corporation, WISTRON CORPORATION, a Taiwan corporation, WISTRON INFOCOMM (TEXAS) CORP., a Texas CORPORATION, WISTRON INFOCOMM (AMERICA) TECHNOLOGY CORP., a Texas corporation, HON HAI PRECISION INDUSTRIAL CO., LTD, a Taiwan corporation, FOXCONN TECHNOLOGY CO., LTD., a Taiwan corporation, SUPER MICRO COMPUTER, INC., a California corporation, RADISYS CORPORATION, an Oregon corporation, COMPAL ELECTRONICS, INC., a Taiwan corporation, BIZCOM ELECTRONICS, INC., a California corporation, ASROCK INCORPORATION, a Taiwan corporation, ASROCK AMERICA INC., a California corporation, Defendants.	

Plaintiffs AFTG-TG, L.L.C. ("AFTG") and Phillip M. Adams & Associates, L.L.C. ("Adams") brings this action for the infringement of multiple U.S. Patents. This is a claim

for patent infringement and arises under the patent laws of the United States, Title 35 of the United States Code. This Court has exclusive jurisdiction over the subject matter of this Complaint under 28 U.S.C. § 1338(a). Venue is proper in this District under 28 U.S.C. §§ 1391(c)-(d) and 1400(b).

PLAINTIFFS

1. Adams is a Utah limited liability company with its principle place of business now in Wyoming. Adams owns all right, title and interest in and has standing to sue for infringement of the United States patents identified below:

- 5,983,002 titled "Defective Floppy Diskette Controller Detection Apparatus and Method" ("the '002 patent");
- 6,401,222 titled "Defective Floppy Diskette Controller Detection Apparatus and Method" ("the '222 patent");
- 6,687,858 entitled "Software-Hardware Welding System" ("the '858 patent");
- 7,251,752 titled "Computerized Product Improvement Apparatus and Method" ("the '752 patent");
- 7,069,475 entitled "Software-Hardware Welding System" ("the '475 patent"); and
- 7,409,601 entitled "Read-Write Function Separation Apparatus and Method" ("the '601 patent");

(collectively, "Adams patents-in-suit").

2. AFTG is a Wyoming limited liability company with its principal place of business in Wyoming. AFTG owns all right, title and interest in and has standing to sue for infringement of the United States patents identified below:

- 6,691,181 titled "Programmatic Time-Gap Defect Detection Apparatus and Method" ("the '181 patent");
- 7,249,203 titled "Programmatic Time-Gap Defect Detection Apparatus and Method" ("the '203 patent");
- 7,472,207 titled "Optimized-Incrementing, Time-Gap Defect Detection Apparatus and Method" ("the '207 patent");
- 6,842,802 titled "Programmatic Time-Gap Defect Correction Apparatus and Method" ("the '802 patent");
- 7,366,804 titled "Programmatic Time-Gap Defect Correction Apparatus and Method" ("the '804 patent"); and
- 7,653,766 titled "Time-Gap Defect Detection Apparatus and Method" ("the '766 patent");

(collectively the "AFTG patents-in-suit"). The Adams patents-in-suit and the AFTG patents-in-suit are collectively referred to hereinafter as the "Patents-in-Suit".

3. Dr. Phillip M. Adams heads plaintiff Adams and AFTG, and resides in Afton, Wyoming. He has a Ph.D. in applied computer science, a D.Sc. in engineering and over 30 years of experience in the computer industry. Dr. Adams has served on the faculty of major universities and holds numerous patents. In the late 1980s, Dr. Adams characterized a defect in the NEC 765A floppy disk controller (FDC) present in most personal computers at the time.

This defect caused the random destruction or corruption of data without proper notification to the user that data had been destroyed or corrupted.

4. The random destruction or corruption of data in computers is a serious, and potentially cataclysmic, problem. Computers are used throughout society and the data integrity of computers is the lifeblood of the information age. The public relies upon the integrity of data stored by computers and exchanged between them to support virtually all aspects of society, including the multitude of financial transactions, the accurate and effective diagnoses and treatment of illnesses and the proper design and construction of automobiles, aircraft, bridges, dams, office buildings and various other structures and devices.

5. The scope and seriousness of the FDC-related defects characterized by Dr. Adams were illustrated by the $2.1 billion *Toshiba* class-action settlement in the Eastern District of Texas. In addition to the *Toshiba* class-action settlement, the United States Government settled False Claims Act claims against Toshiba for $33.5 million. The State of California settled California State False Claims Act claims against Toshiba for $33 million. Also, several billion-dollar class-action lawsuits are presently pending against different computer companies in various federal and state courts because of such defects built into various computers.

6. In the 20 plus years since Dr. Adams characterized the NEC 765A defect, Dr. Adams has discovered related data corruption defects and has devoted thousands of hours to developing solutions, alerting various federal and state governments,

computer companies and private purchasers to such defects and assisting computer manufacturers to acknowledge and remedy these defects. In addition, Dr. Adams has developed several patented computer technologies that address such defects. First, he developed patented computer technology (both hardware and software) that detect which computers are defective. Second, he developed patented solutions (both hardware and software) that resolve the defects found in such computers.

7. Hewlett Packard (one of the world's leaders in personal computers) obtained a license from Adams, and then placed Adams' solution on the Internet for all its customers throughout the world. Thus, any Hewlett Packard customer could go to this Internet website, download the solution and fully repair such defects in his or her computer. The website included notice of Adams' patent. Compaq (before it merged with Hewlett Packard) also obtained a license under Dr. Adams' patent.

8. In May of 2005, in compliance with the terms of the Hewlett Packard and Compaq license agreements, Adams was forced to file suit against numerous companies in the computer industry for the theft of his trade secrets and infringement of patented technology owned by Adams (the "Winbond Litigation"). Previously, Adams had been involved and occupied in litigation with Gateway Computer Company from 2002 until 2006 when Gateway settled on the first day of trial. Adams has been involved in litigation since at least 2002 against computer companies such as Gateway, Sony, Dell, IBM, Lenovo, Quanta, Fujitsu, and Dell.

9. Through the course of the Winbond Litigation it was discovered that Winbond's infringing chips had been distributed throughout the computer industry and had been knowingly incorporated into the Defendants products.

10. In May 2010 Adams retained the firm of Quinn Dumke LLC to approach each of the Defendants, under F.R.E. 408, with the hope of entering into a mutually acceptable agreement to address the suspected patent infringement without costly litigation.

11. Instead of entering into fruitful negotiations concerning what was then thought to be clear liability for infringement, Defendants instead determined that it would be more beneficial to either wait for the determination of infringement in the Winbond Litigation, or request that Adams supply claim charts and enter into a level of discovery more suited for Markman hearings during litigation.

12. Throughout the course of the Winbond Litigation many companies that were party to the suit entered into settlement agreements with Adams, but the defendants Winbond Electronics Corporation ("Winbond"), ASUSTek Computer, Inc., ASUS Computer International, Micro-Star International, and Micro-Star USA obstinately maintained a position of non-infringement.

13. Defendant ITE Tech, Inc. ("ITE") has had a default judgment of patent infringement and misappropriation of trade secrets entered and is awaiting the Court's determination of jurisdiction prior to providing enforcement.

14. On October 5, 2010 a jury of 12 unanimously determined that Winbond had infringed all asserted claims of Adams '002 patent.

15. As a result of the verdict and default judgment it is clear that all Winbond, Nuvoton (Winbond's wholly owned I/O chip subsidiary), or ITE super I/O chips with an Opus International based FDC core ("Infringing Chips") infringe the patent in suit. Additionally, it is believed that chips from VIA Technologies, Inc. ("VIA"), Silicon Integrated Systems Corporation ("SIS"), and Standard Microsystems Corp. ("SMSC") use the same infringing architecture in their chips ("Dependent Chips"), which have been incorporated into the defendants' products.

16. The Defendants' knowing and intentional use, manufacture and/or importation of infringing methods, articles of manufacture, and products subject them to, at a minimum, liability under 35 U.S.C § 271 (a), (b), (c) and (g).

DEFENDANTS

17. Giga-Byte Technology Co. Ltd. is a company organized under the laws of Taiwan, with a place of business at No.6, Bau Chiang Road, Hsin-Tien, Taipei 231, Taiwan, R.O.C.; including all U.S. subsidiaries.

18. Gigabyte Global Business Corporation is a California corporation with a place of business at 17358 Railroad St., City Of Industry, California 91748, U.S.A. (Giga-Byte Technology Co. Ltd. and Gigabyte Global Business Corporation collectively referred to as "Gigabyte").

19. Elitegroup Computer Systems Co., Ltd. is a company organized under the laws of Taiwan, with a place of business at No.239, SEC2, Ti Ding Blvd., Taipei 1149, Taiwan, R.O.C.; including all U.S. subsidiaries.

20. Elitegroup Computer Systems, Inc. is a California corporation with a place of business of 45401 Research Avenue Fremont, California 94539, U.S.A. (Elitegroup Computer Systems Co., Ltd. and Elitegroup Computer Systems, Inc. collectively referred as "ECS").

21. Universal Scientific Industrial ("USI") is a company organized under the laws of Taiwan, with a place of business at 141, Lane 351, Taiping RD.,SEC.1, Taso Tuen, Nan-Tou, Taiwan, R.O.C.; including all U.S. subsidiaries, if any.

22. Jetway Information Co. Ltd. is a company organized under the laws of Taiwan, with a place of business at 4F, No.168. Li Teh St, Chung Ho City, 235, Taipei, R.O.C.; including all U.S. subsidiaries.

23. Jetway Computer Corp. is a California corporation with its principal place of business at 38507 Cherry St. Suite #E, Newark California, 94560 U.S.A. (Jetway Computer Corp. and Jetway Information Co., Ltd collectively referred to as "Jetway")

24. Biostar Microtech Int'l Corp. is a company organized under the laws of Taiwan, with a place of business at 3FL. No. 108-2 Min Chuan Road. Hsin Tien City, Taipei Hsien, 231 Taiwan, R.O.C.; including all U.S. subsidiaries.

25. Biostar Microtech (U.S.A.) Corp. is a California corporation with a place of business at 18551-18553 Z Gale Ave., City of Industry, California 91748, U.S.A. (Biostar Microtech Int'l Corp. and Biostar Microtech (U.S.A.) Corp. collectively referred to as "Biostar").

26. Avalue Technology Inc. is a company organized under the laws of Taiwan, with a place of business at 7F, 228, Lian-cheng Road, Chung Ho City, Taipei, Taiwan, R.O.C.; including all U.S. subsidiaries.

27. Avalue Technology Inc. (US) is a New Jersey corporation with a place of business at 200 Tornillo Way, 2nd Floor, Tinton Falls, NJ 07712, U.S.A. (Avalue Technology Inc. and Avalue Technology Inc. (US) are collectively referred to as "AValue").

28. DFI Inc. is a company organized under the laws of Taiwan, with a place of business at 100, Huan-Ho St., Hsi-Chih City, Taipei Hsien, Taiwan, R.O.C.; including all U.S. subsidiaries.

29. DFI San Jose Inc. is a California corporation, with a place of business at 48008 Fremont Blvd, Fremont, California 94538, U.S.A. (DFI Inc. and DFI San Jose Inc. collectively as "DFI").

30. DFI-ACP is a company organized under the laws of Taiwan, with a place of business at No.100, Huanhe St, Sijhih City, Taipei County 22154, Taiwan, R.O.C.; including all U.S. subsidiaries.

31. DFI Technologies, LLC is a California limited liability company with a place of business at 1065 National Drive, Suite 1, Sacramento, California 95834, U.S.A.

32. ITOX LLC is a New Jersey limited liability company with a place of business at 8 Elkins Road, East Brunswick, NJ 08816, U.S.A. (DFI-ACP, DFI Technologies, LLC and ITOX LLC collectively referred to as ACP).

33. First International Computer, Inc. Is a company organized under the laws of Taiwan, with a place of business at 19F, No.300, Yang Guang St., NeiHu, Taipei, Taiwan, R.O.C.; including all U.S. subsidiaries.

34. FIC USA is a California corporation with a place of business of 5070 Brandin Court, Fremont, California 94538, U.S.A. (First International Computer, Inc and FIC USA collectively referred to as "FIC").

35. Mitac International Corp. is a company organized under the laws of Taiwan, with a place of business at No. 1, R&D 2nd Rd. Hsin-Chu Science Industrial Park, Hsin-Chu Hsien, Taiwan, R.O.C.; including all U.S. subsidiaries.

36. Tyan Computer Corporation is a California corporation with a place of business at 47436 Fremont Boulevard, Fremont, California 94538, U.S.A. (Mitac International Corp. and Tyan Computer Corporation collectively referred to as "Tyan").

37. Shuttle Inc. is a company organized under the laws of Taiwan, with a place of business at NO. 30, Lane 76, Rei Kuang Rd., Nei-Hu Dist., Taipei, Taiwan, R.O.C.; including all U.S. subsidiaries.

38. Shuttle International, Inc. is a California Corporation with its principal place of business at 48389 Fremont Boulevard, Fremont, California 94538, U.S.A. (Shuttle Inc. and Shuttle International, Inc. collectively referred to as "Shuttle").

39. Wistron Corporation is a company organized under the laws of Taiwan, with a place of business at 21F, 88, Sec. 1, Hsin Tai Wu Road, Hsichih, Taipei Hsien 221, Taiwan, R.O.C.; including all U.S. subsidiaries.

40. Wistron InfoComm (Texas) Corporation is a Texas corporation with a place of business at 4051 Freport Parkway # 200, Grapevine, TX 76051, U.S.A.

41. Wistron InfoComm Technology (America) Corporation is a Texas corporation with a place of business at 800 Parker Square # 285a, Flower Mound, TX 75028, U.S.A.

42. AOpen Inc. is a company organized under the laws of Taiwan, with a place of business at No.68, Ruiguang Rd., Neihu District, Taipei, Taiwan, R.O.C.; including all U.S. subsidiaries. (AOpen Inc. and AOpen America collectively referred to as "AOpen").

43. AOpen America is a California corporation with its principal place of business at 2890 Zanker Road, Suite 101 San Jose, California 95134, U.S.A. (Wistron Corporation, Wistron InfoComm (Texas) Corporation, Wistron InfoComm Technology (America) Corporation, AOpen Inc. and AOpen America are collectively referred to as "Wistron").

44. Hon Hai Precision Industrial Co., Ltd. is a company organized under the laws of Taiwan, with a place of business at 2 Tzu Yu St., Tu-Cheng City, Taiwan, R.O.C.

45. Foxconn Technology Co., Ltd. is a company organized under the laws of Taiwan, with a place of business at NO.3-2 Chung-Shan Rd., Tu-Cheng City, Taipei, Co. 236, Taiwan, R.O.C.; including all U.S. subsidiaries, if any. (Hon Hai Precision Industrial Co., Ltd. and Foxconn Technology Co., Ltd. collectively referred to as "Foxconn").

46. Super Micro Computer, Inc. ("Supermicro") is a California corporation with a place of business at 48350 Fremont Blvd., Fremont, California 94538, U.S.A.

47. Radisys Corporation ("Radisys") is an Oregon corporation with a place of business at 5545 N.E. Dawson Creek Drive, Hillsboro, OR 97124.

48. Compal Electronics, Inc. is a company organized under the laws of Taiwan, with a place of business at No.581, Ruiguang Rd., Neihu District, Taipei City 11492, Taiwan, R.O.C.; including all U.S. subsidiaries.

49. Bizcom Electronics, Inc. is a California corporation with a place of business at 1171 Montague Expressway, Milpitas, California 95035, U.S.A. (Compal Electronics, Inc., Bizcom Electronics, Inc. collectively referred to as "Compal").

50. ASRock Incorporation is a company organized under the laws of Taiwan, with a place of business at 2F., No.37, Sec. 2, Jhongyang S. Rd., Beitou District, Taipei City 112, Taiwan, R.O.C.; and all U.S. subsidiaries.

51. ASRock America, Inc. is a California corporation with a place of business at 13848 Magnolia Avenue, Chino, California 91710, U.S.A. (ASRock Incorporated and ASRock America, Inc. are collectively referred to as "ASRock"). (All defendant parties are collectively referred to as "Defendants").

COUNT I
ACTS OF PATENT INFRINGEMENT

52. Defendants have infringed various claims of each of the patents-in-suit in violation of 35 U.S.C. § 271 through, among other activities, the manufacture, use, importation, sale and/or offer for sale of computer chips, motherboards, computers and other products, as well as using infringing methods including but not limited to testing of Defendants' products as a part of the manufacturing process. In addition to their direct infringement, Defendants have also knowingly and intentionally induced others to infringe under 35 U.S.C. § 271(b) (such as its customers and end-users in this judicial district and throughout the United States) by intentionally aiding, assisting and encouraging their infringement, and defendants have knowingly contributed to the infringement of others under 35 U.S.C. § 271(c) (such as its customers and end-users in this judicial district and throughout the United States) by supplying their technical know-how and infringing computer chips and motherboards (which are non-staple articles of commerce having no substantial non-infringing use). The infringement that has occurred is at least of the following claims of the following patents:

Patent Number	Claims
5,983,002	1-6; 8-15
6,401,222	1-7; 9-16; 18-20
6,687,858	1; 3-4
7,251,752	1; 3;
6,691,181	1-3; 10-11; 12-14
7,249,203	1; 10-11; 12-14
7,472,207	1; 10-12
7,069,475	6; 14-17; 21; 23
7,409,601	1-4; 6-7; 9-12; 14-15
6,842,802	1-29
7,366,804	1-30
7,653,766	1-19

NOTICE AND WILLFULNESS

53. On information and belief, all Defendants have had actual and/or constructive notice of their infringement of the patents-in-suit, including actual pre-complaint notice.

54. On information and belief, all Defendants' infringement has been willful and deliberate as to the patents-in-suit and has occurred with the knowledge that chips and cores of Winbond and ITE design have at a minimum infringed Adams' '002 patent in violation of 35 U.S.C. § 284. Defendants' infringement has injured and will continue to injure Adams, unless and until this Court enters an injunction prohibiting further infringement and, specifically, enjoining further manufacture, use, importation, offers for sale and/or sale of Defendants' products and/or services that contain infringing technology; including but not limited to Winbond's and/or ITE's core; or fall within the scope of any claim of any of the patents-in-suit.

PRAYER FOR RELIEF

WHEREFORE, Adams respectfully requests this Court enter judgment against Defendants and against their subsidiaries, affiliates, agents, servants, employees and all persons in active concert or participation with them granting the following relief:

A) An award of damages adequate to compensate Adams for the patent infringement by Defendants that has occurred, together with prejudgment interest from the date infringement of each respective patents-in-suit began together with costs, said damages to be no less than a reasonable royalty;

B) An award to Adams of all damages so determined for willful infringement, including an increase of the compensatory damages by up to three times, in accordance with 35 U.S.C. § 284;

C) A finding that this case is exceptional and an award to Adams of all remedies available under 35 U.S.C. § 285, including the costs of this action and reasonable attorney's fees;

D) A permanent injunction prohibiting further infringement, inducement and contributory infringement of the patents-in-suit;

E) Such other and further relief as this Court or a jury may deem proper and/or just.

DATED: October 18, 2010

DRAY, THOMSON AND DYEKMAN, PC

By: _____

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Attorneys for Plaintiffs

EXHIBIT D

FILED
U.S. DISTRICT COURT
DISTRICT OF WYOMING
OCT 18 2010
Stephan Harris, Clerk
Cheyenne

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Attorneys for Plaintiffs

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF WYOMING

AFTG-TG, L.L.C., a Wyoming limited liability company, PHILLIP M. ADAMS & ASSOCIATES, L.L.C., a Utah limited liability company,

Plaintiffs,

vs.

FEATURE INTEGRATION TECHNOLOGY INC., a Taiwan corporation, VIA TECHNOLOGIES, INC., a Taiwan corporation, VIA TECHNOLOGIES, INC., USA, a California corporation, CENTAUR TECHNOLOGY, a Texas Corporation, VIA TECHNOLOGIES CPU, INC., a Texas corporation, SILICON INTEGRATED SYSTEMS CORPORATION, a Taiwan corporation, SILICON INTEGRATED SYSTEMS CORPORATION (USA), a California corporation, STANDARD MICROSYSTEMS CORPORATION, a Delaware corporation, NUVOTON TECHNOLOGY CORPORATION, a Taiwan corporation, NUVOTON TECHNOLOGY CORPORATION AMERICA, a California corporation,

COMPLAINT FOR PATENT INFRINGEMENT AND TRADE SECRET THEFT

Civil No. 10CV230-D

Judge: Downes

PEGATRON CORPORATION, a Taiwan corporation, PEGATRON TECHNOLOGY SERVICE INC., an Indiana corporation, UNIHAN, a Taiwan corporation, Defendants.	

Plaintiffs AFTG-TG, L.L.C. ("AFTG") and Phillip M. Adams & Associates, L.L.C. ("Adams") brings this action for the infringement of multiple U.S. Patents. This is a claim for patent infringement and arises under the patent laws of the United States, Title 35 of the United States Code. This Court has exclusive jurisdiction over the subject matter of this Complaint under 28 U.S.C. § 1338(a). Venue is proper in this District under 28 U.S.C. §§ 1391(c)-(d) and 1400(b).

PLAINTIFFS

1. Adams is a Utah limited liability company with its principle place of business now in Wyoming. Adams owns all right, title and interest in and has standing to sue for infringement of the United States patents identified below:

- 5,983,002 titled "Defective Floppy Diskette Controller Detection Apparatus and Method" ("the '002 patent");
- 6,401,222 titled "Defective Floppy Diskette Controller Detection Apparatus and Method" ("the '222 patent");
- 6,687,858 entitled "Software-Hardware Welding System" ("the '858 patent");
- 7,251,752 titled "Computerized Product Improvement Apparatus and Method" ("the '752 patent");
- 7,069,475 entitled "Software-Hardware Welding System" ("the '475

patent"); and

- 7,409,601 entitled "Read-Write Function Separation Apparatus and Method" ("the '601 patent");

(collectively "Adams patents-in-suit").

2. AFTG is a Wyoming limited liability company with its principal place of business in Wyoming. AFTG owns all right, title and interest in and has standing to sue for infringement of the United States patents identified below:

- 6,691,181 titled "Programmatic Time-Gap Defect Detection Apparatus and Method" ("the '181 patent");
- 7,249,203 titled "Programmatic Time-Gap Defect Detection Apparatus and Method" ("the '203 patent");
- 7,472,207 titled "Optimized-Incrementing, Time-Gap Defect Detection Apparatus and Method" ("the '207 patent");
- 6,842,802 titled "Programmatic Time-Gap Defect Correction Apparatus and Method" ("the '802 patent");
- 7,366,804 titled "Programmatic Time-Gap Defect Correction Apparatus and Method" ("the '804 patent"); and
- 7,653,766 titled "Time-Gap Defect Detection Apparatus and Method" ("the '766 patent");

(collectively the "AFTG patents-in-suit"). The Adams patents-in-suit and the AFTG patents-in-suit are collectively referred to hereinafter as the "Patents-in-Suit".

3. Dr. Phillip M. Adams heads plaintiff Adams and AFTG, and resides in Wyoming. He has a Ph.D. in applied computer science, a D.Sc. in engineering and over 30 years of experience in the computer industry. Dr. Adams has served on the faculty of major universities and holds numerous patents. In the late 1980s, Dr. Adams characterized a defect in the NEC 765A floppy disk controller (FDC) present in most personal computers at the time. This defect caused the random destruction or corruption of data without proper notification to the user that data had been destroyed or corrupted.

4. The random destruction or corruption of data in computers is a serious, and potentially cataclysmic, problem. Computers are used throughout society and the data integrity of computers is the lifeblood of the information age. The public relies upon the integrity of data stored by computers and exchanged between them to support virtually all aspects of society, including the multitude of financial transactions, the accurate and effective diagnoses and treatment of illnesses and the proper design and construction of automobiles, aircraft, bridges, dams, office buildings and various other structures and devices.

5. The scope and seriousness of the FDC-related defects characterized by Dr. Adams were illustrated by the $2.1 billion *Toshiba* class-action settlement in the Eastern District of Texas. In addition to the *Toshiba* class-action settlement, the United States Government settled False Claims Act claims against Toshiba for $33.5 million. The State of California settled California State False Claims Act claims against Toshiba

for $33 million. Also, several billion-dollar class-action lawsuits are presently pending against different computer companies in various federal and state courts because of such defects built into various computers.

6. In the 20 plus years since Dr. Adams characterized the NEC 765A defect, Dr. Adams has discovered related data corruption defects and has devoted thousands of hours to developing solutions, alerting various federal and state governments, computer companies and private purchasers to such defects and assisting computer manufacturers to acknowledge and remedy these defects. In addition, Dr. Adams has developed several patented computer technologies that address such defects. First, he developed patented computer technology (both hardware and software) that detect which computers are defective. Second, he developed patented solutions (both hardware and software) that resolve the defects found in such computers.

7. Hewlett Packard (one of the world's leaders in personal computers) obtained a license from Adams, and then placed Adams' solution on the Internet for all its customers throughout the world. Thus, any Hewlett Packard customer could go to this Internet website, download the solution and fully repair such defects in his or her computer. The website included notice of Adams' patent. Compaq (before it merged with Hewlett Packard) also obtained a license under Dr. Adams' patent.

8. In May of 2005, in compliance with the terms of the Hewlett Packard and Compaq license agreements, Adams was forced to file suit against numerous companies in the computer industry for the theft of his trade secrets and infringement of

patented technology owned by Adams (the "Winbond Litigation"). Previously, Adams had been involved and occupied in litigation with Gateway Computer Company from 2002 until 2006 when Gateway settled on the first day of trial. Adams has been involved in litigation since at least 2002 against computer companies such as Gateway, Sony, Dell, IBM, Lenovo, Quanta, Fujitsu, and Dell.

9. Through the course of the Winbond Litigation it was discovered that Winbond's infringing chips had been distributed throughout the computer industry and had been knowingly incorporated into the Defendants products.

10. In May 2010 Adams retained the firm of Quinn Dumke LLC to approach each of the Defendants, under F.R.E. 408, with the hope of entering into a mutually acceptable agreement to address the suspected patent infringement without costly litigation.

11. Instead of entering into fruitful negotiations concerning what was then thought to be clear liability for infringement, Defendants instead determined that it would be more beneficial to either wait for the determination of infringement in the Winbond Litigation, or request that Adams supply claim charts and enter into a level of discovery more suited for Markman hearings during litigation.

12. Throughout the course of the Winbond Litigation many companies that were party to the suit entered into settlement agreements with Adams, but the defendants Winbond Electronics Corporation ("Winbond"), ASUSTek Computer, Inc., ASUS Computer International, Micro-Star International, and Micro-Star USA obstinately

maintained a position of non-infringement.

13. Defendant ITE Tech, Inc. ("ITE") has had a default judgment of patent infringement and misappropriation of trade secrets entered and is awaiting the Court's determination of jurisdiction prior to providing enforcement.

14. On October 5, 2010 a jury of 12 unanimously determined that Winbond had infringed all asserted claims of Adams '002 patent.

15. As a result of the verdict and default judgment it is clear that all Winbond, Nuvoton (Winbond's wholly owned I/O chip subsidiary), or ITE super I/O chips with an Opus International based FDC core ("Infringing Chips") infringe the patent in suit. Additionally, it is believed that chips from VIA Technologies, Inc. ("VIA"), Silicon Integrated Systems Corporation ("SIS"), and Standard Microsystems Corp. ("SMSC") use the same infringing architecture in their chips ("Dependent Chips"), which have been incorporated into the defendants' products.

16. The Defendants' knowing and intentional use, manufacture and/or importation of infringing methods, articles of manufacture, and products subject them to, at a minimum, liability under 35 U.S.C § 271 (a), (b), (c) and (g).

DEFENDANTS

17. Feature Integration Technology Inc. ("Fintek") is a company organized under the laws of Taiwan, with a place of business at 3F-7, No.36, Tai Yuen St., Chupei City, Hsinchu, Taiwan, R.O.C.; and all U.S. subsidiaries, if any.

18. VIA Technologies, Inc. is a company organized under the laws of Taiwan, with a place of business at 1F, 531, Chung-Cheng Rd., Hsin-Tien, Taipei 231, Taiwan, R.O.C.; and all U.S. subsidiaries. (VIA Technologies, Inc., VIA Technologies, Inc., USA, Centaur Technology, and VIA Technologies CPU, Inc. are collectively referred to as "VIA").

19. VIA Technologies, Inc., USA is a California corporation with a place of business at 940 Mission Court, Fremont, CA 94539, U.S.A.

20. Centaur Technology is a Texas corporation with a place of business at 7600-C N. Capital of Texas Hwy, Suite 300, Austin, Texas 78731, U.S.A.

21. VIA Technologies CPU, Inc. is a Texas corporation with a place of business at 701 Highlander Blvd., Suite 300, Arlington, Texas 76015, U.S.A.

22. Silicon Integrated Systems Corporation is a company organized under the laws of Taiwan, with a place of business at No.180, Sec.2, Gongdaowu Rd., Hsin-Chu, Taiwan 300, R.O.C. (Silicon Integrated Systems Corporation and Silicon Integrated Systems Corporation (USA) are collectively referred to as "SIS").

23. Silicon Integrated Systems Corporation (USA) is a California corporation with a place of business at 838 N. Hillview Dr., Milpitas, California 95035, U.S.A.

24. Standard Microsystems Corporation ("SMSC") is a Delaware corporation with a place of business at 80 Arkay Dr., Hauppauge, NY 11788, U.S.A.

25. Nuvoton Technology Corporation is a company organized under the laws of Taiwan, with a place of business at No. 4, Creation Rd. III, Hsinchu Science Park,

Taiwan, R.O.C.; and all U.S. subsidiaries. (Nuvoton Technology Corporation and Nuvoton Technology Corporation America are collectively referred to as "Nuvoton").

26. Nuvoton Technology Corporation America is a Delaware corporation with a place of business at 2727 N. First St., San Jose, California 95134, U.S.A.

27. Pegatron Corporation is a company organized under the laws of Taiwan, with a place of business at 5F, No. 76, Ligong St., Beitou, Taipei, Taiwan, R.O.C.; and all U.S. subsidiaries. (Pegatron Corporation, Pegatron Technology Service Inc. and Unihan are collectively referred to as "Pegatron").

28. Pegatron Technology Service Inc. is an Indiana corporation with a place of business at 121 River Ridge Circle, Jeffersonville, Indiana 47130, U.S.A.

29. Unihan is a company organized under the laws of Taiwan, with a place of business at No 150 Lide Road, Beitou District, Taipei City, 112, Taiwan, R.O.C. (All defendant parties are collectively referred to as "Defendants").

COUNT I
ACTS OF PATENT INFRINGEMENT

30. Defendants have infringed various claims of each of the patents-in-suit in violation of 35 U.S.C. § 271 through, among other activities, the manufacture, use, importation, sale and/or offer for sale of computer chips, motherboards, computers and other products, as well as using infringing methods including but not limited to testing of Defendants' products as a part of the manufacturing process. In addition to their direct infringement, Defendants have also knowingly and intentionally induced others to

infringe under 35 U.S.C. § 271(b) (such as its customers and end-users in this judicial district and throughout the United States) by intentionally aiding, assisting and encouraging their infringement, and defendants have knowingly contributed to the infringement of others under 35 U.S.C. § 271(c) (such as its customers and end-users in this judicial district and throughout the United States) by supplying their technical know-how and infringing computer chips and motherboards (which are non-staple articles of commerce having no substantial non-infringing use). The infringement that has occurred is at least of the following claims of the following patents:

Patent Number	Claims
5,983,002	1-6; 8-15
6,401,222	1-7; 9-16; 18-20
6,687,858	1; 3-4
7,251,752	1; 3;
6,691,181	1-3; 10-11; 12-14
7,249,203	1; 10-11; 12-14
7,472,207	1; 10-12
7,069,475	6; 14-17; 21; 23
7,409,601	1-4; 6-7; 9-12; 14-15
6,842,802	1-29
7,366,804	1-30
7,653,766	1-19

NOTICE AND WILLFULNESS

31. On information and belief, all Defendants have had actual and/or constructive notice of their infringement of the patents-in-suit, including actual pre-complaint notice.

32. On information and belief, all Defendants' infringement has been willful and deliberate as to the patents-in-suit and has occurred with the knowledge that chips and cores of Winbond and ITE design have at a minimum infringed Adams' '002 patent in violation of 35 U.S.C. § 284. Defendants' infringement has injured and will continue to injure Adams, unless and until this Court enters an injunction prohibiting further infringement and, specifically, enjoining further manufacture, use, importation, offers for sale and/or sale of Defendants' products and/or services that contain infringing technology; including but not limited to Winbond's and/or ITE's core; or fall within the scope of any claim of any of the patents-in-suit.

COUNT II
MISAPPROPRIATION OF TRADE SECRETS

33. Plaintiff realleges and incorporates Paragraphs 1-32 above as Paragraphs 1-32 of Count II.

34. In a prior lawsuit in the Tenth Circuit judicial district of Utah, Adams v. Gateway Inc., No. 2:02-CV-01065, Adams discovered that Gateway had spoliated evidence and improperly attempted to hide damaging documents by asserting that the damaging documents were privileged. Thereafter, the court ruled that Gateway's assertions of privilege were improper and sanctioned Gateway for improperly asserting privilege in an effort to hide and cover up damaging documents. Adams v. Gateway, 2003 WL 23787856 (D. Utah 2003), *affirmed and ordering production of documents on September 14, 2004*, 2004 WL 2061884 (D. Utah 2004)

35. The court thereafter compelled Gateway to produce certain allegedly "privileged" documents demonstrating that ASUS, Winbond and MSI had obtained an unauthorized and stolen copy of Adams' patented and trade secret technology in 2000, and that ASUS, Winbond and ITE were using the stolen copy of Adams' technology in their manufacture, assembly, and testing of computer products.

36. In such documents, Winbond, ASUS and ITE admitted that they had obtained copies of Adams' "Detector" programs, proprietary and confidential software programs which Dr. Adams invented. Furthermore, Winbond and Asus admitted to reverse engineering Adams' Detector programs to determine and distribute Adams trade secrets. The Detector programs allow a user to determine defects in a computer, and the documents revealed that Winbond, ASUS and MSI actually used the Detector programs in the testing and manufacturing FDC chips and motherboards that contain them.

37. Winbond and ASUS conspired to pirate Adams' Detector programs. ASUS obtained Adams' Detector testing software and used it to produce its own test utility or software (which it called 1fdc.exe and w2sec.exe) and test its motherboards and Winbond's chops. Internal e-mails and notes that Winbond produced during the Gateway litigation clearly demonstrate that ASUS worked closely with Winbond in pirating and using Adams software and modifying Winbond chips. ITE also misappropriated Adams software and used it to test and modify its chips.

38. The Detector programs contained trade secrets of Adams, including, among other things, a specific method to allow the detection process to be performed on any byte in a sector. Adams maintained the Detector programs in confidence, and when it licensed the programs, Adams required in writing that its licensees keep the programs confidential. Adams maintained the confidentiality of its Detector programs' trade secrets until the aforementioned '222 patent issued on June 4, 2002. Until that time, Adams' Detector programs' trade secrets were valuable; for example; Compaq Computers licensed the Adams Detector programs, among other patented technology, for $31.5 million.

39. Through the course of the Winbond Litigation it was determined that additional companies, the Defendants, were knowingly using Adams' proprietary technology that was protected by trade secret. As a result of these companies knowing use of the material they are liable for trade secret misappropriation.

40. Adams Detector programs were clearly labeled as the property of Adams, and the current defendants knew, or had reason to know the property to be misappropriated trade secret material. Defendants also knew or had reason to know that the Adams Detector programs were acquired by improper means.

41. Defendants' conduct violated the Wyoming trade secret common law.

PRAYER FOR RELIEF

WHEREFORE, Adams respectfully requests this Court enter judgment against Defendants and against their subsidiaries, affiliates, agents, servants, employees and all persons in active concert or participation with them granting the following relief:

A) An award of damages adequate to compensate Adams for the patent infringement by Defendants that has occurred, together with prejudgment interest from the date infringement of each respective patents-in-suit began together with costs, said damages to be no less than a reasonable royalty;

B) An award to Adams of all damages so determined for willful infringement, including an increase of the compensatory damages by up to three times, in accordance with 35 U.S.C. § 284;

C) A finding that this case is exceptional and an award to Adams of all remedies available under 35 U.S.C. § 285, including the costs of this action and reasonable attorney's fees;

D) A permanent injunction prohibiting further infringement, inducement and contributory infringement of the patents-in-suit;

E) For its trade secret misappropriation claim against Defendants, an award of all appropriate unjust enrichment damages, including the disgorgement of all profits denied from the misappropriation; and

F) Such other and further relief as this Court or a jury may deem proper and/or just.

DATED: October 18, 2010.

DRAY, THOMSON AND DYEKMAN, PC

By: _____

Randall B. Reed, Wyo. Bar No. 5-2863
DRAY, THOMSON AND DYEKMAN, PC
204 E. 22nd St.
Cheyenne, WY 82001
Telephone: (307) 634-8891
Facsimile: (307) 634-8902

Attorneys for Plaintiffs

EXHIBIT E

US005983002A

United States Patent [19]

Adams

[11] Patent Number: 5,983,002

[45] Date of Patent: Nov. 9, 1999

[54] **DEFECTIVE FLOPPY DISKETTE CONTROLLER DETECTION APPARATUS AND METHOD**

[75] Inventor: **Phillip M. Adams**, Salt Lake City, Utah

[73] Assignee: **Phillip M. Adams & Associates, L.L.C.**, Salt Lake City, Utah

[21] Appl. No.: **08/729,172**

[22] Filed: **Oct. 11, 1996**

[51] **Int. Cl.**[6] **G06F 11/263**

[52] **U.S. Cl.** **395/183.18**; 395/183.17; 395/842; 371/62

[58] **Field of Search** 395/183.18, 185.07, 395/183.21, 842, 843, 183.17; 371/21.2, 21.3, 61, 62

[56] **References Cited**

U.S. PATENT DOCUMENTS

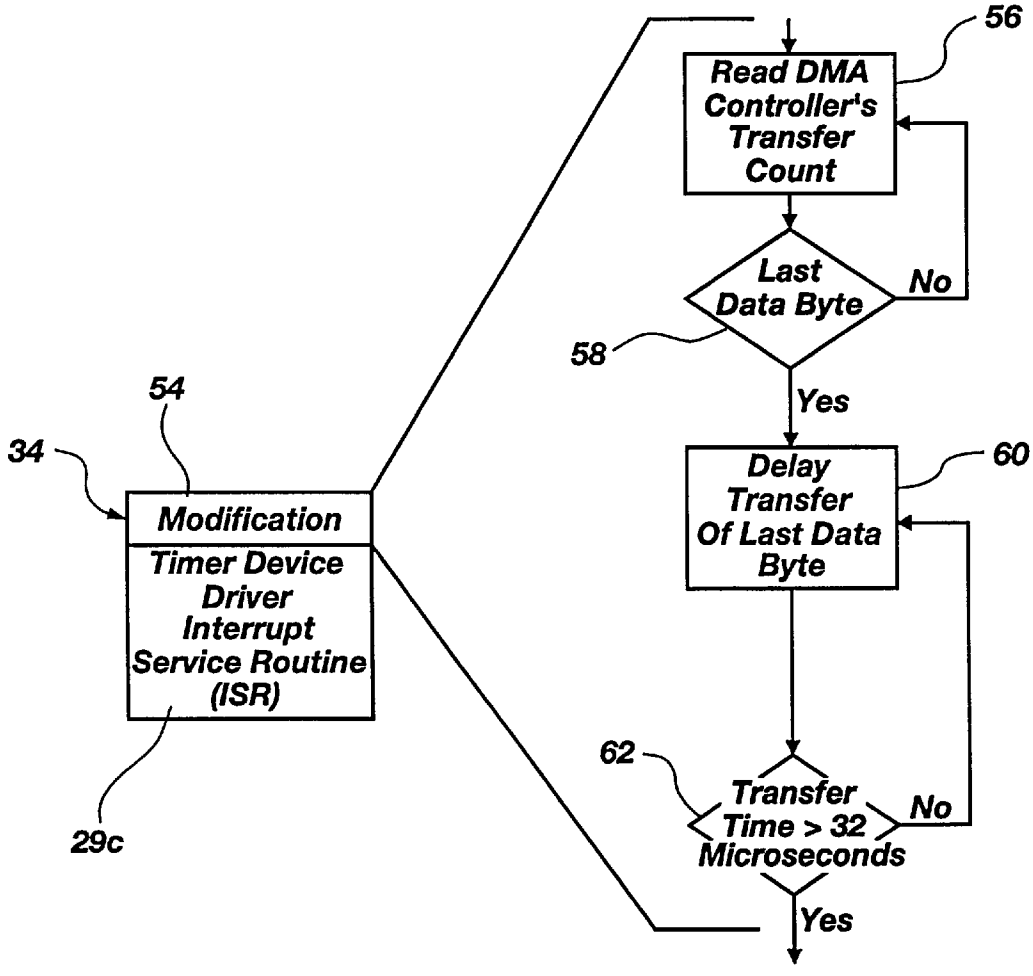
4,789,985	12/1988	Akahoshi et al.	371/11
5,379,414	1/1995	Adams	395/185.08
5,416,782	5/1995	Wells et al.	371/21.2
5,422,892	6/1995	Hii et al.	371/21.2
5,442,753	8/1995	Waldrop et al.	395/842
5,619,642	4/1997	Nielson et al.	395/183.18
5,649,212	7/1997	Kawamura et al.	395/570
5,666,540	9/1997	Hagiwara et al.	395/750.05

Primary Examiner—Robert W. Beausoliel, Jr.
Assistant Examiner—Scott T. Baderman
Attorney, Agent, or Firm—Madson & Metcalf

[57] **ABSTRACT**

A system and method which provides a complete software implementation of a detection process that is capable of detecting defective Floppy Diskette Controllers ("FDCs") without visual hardware inspection or identification. The approach taken includes a multi-phase strategy incorporating programmatic FDC identification, software DMA shadowing, defect inducement, and use of a software decoding network which allows the implementation of the invention to adjust to a wide range of computer system performance levels.

15 Claims, 7 Drawing Sheets



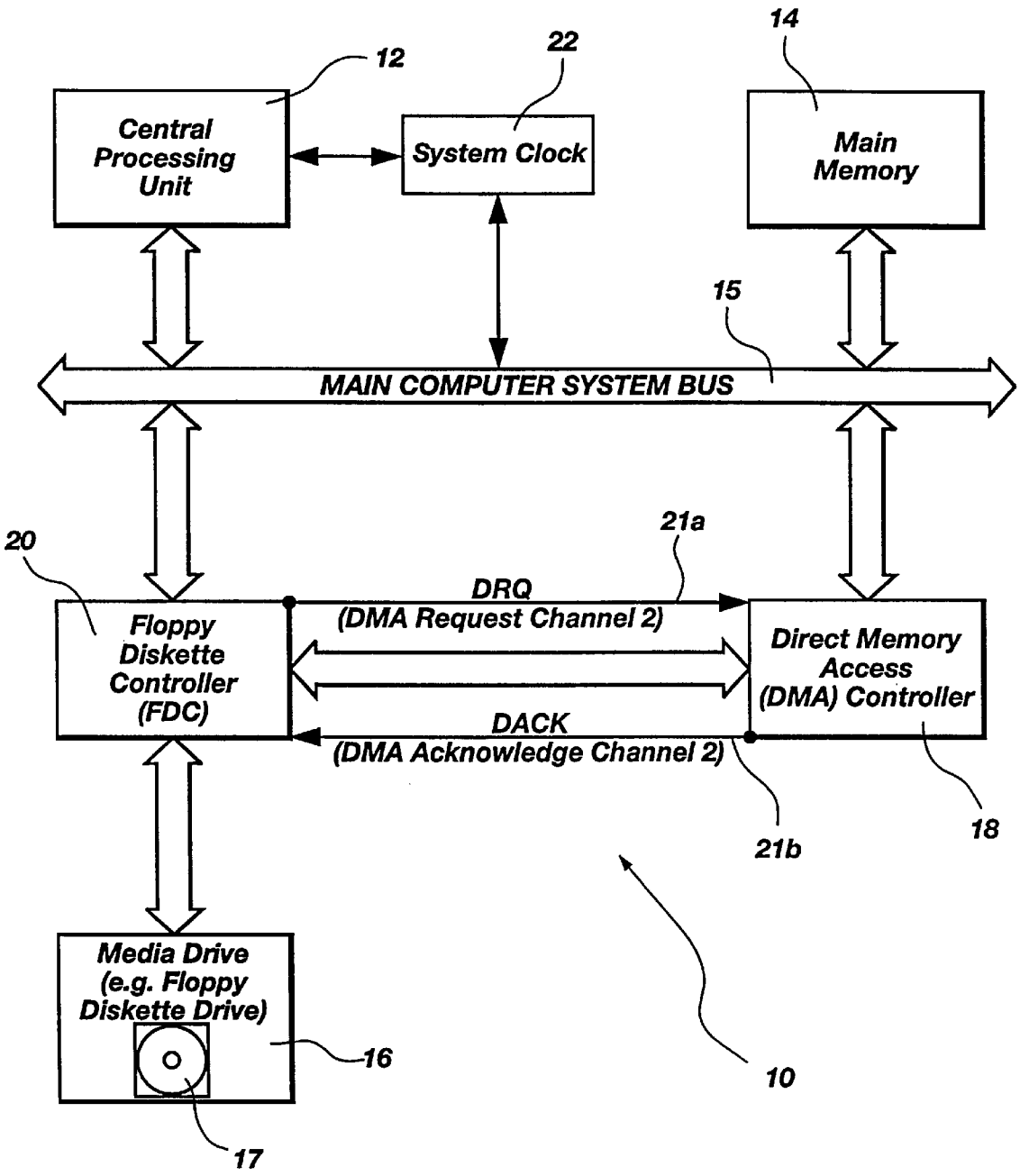

12
22
14
Central Processing Unit
System Clock
Main Memory
15
MAIN COMPUTER SYSTEM BUS
20
21a
DRQ
(DMA Request Channel 2)
Floppy Diskette Controller (FDC)
Direct Memory Access (DMA) Controller
DACK
(DMA Acknowledge Channel 2)
21b
18
Media Drive (e.g. Floppy Diskette Drive)
16
17
10

Fig. 1

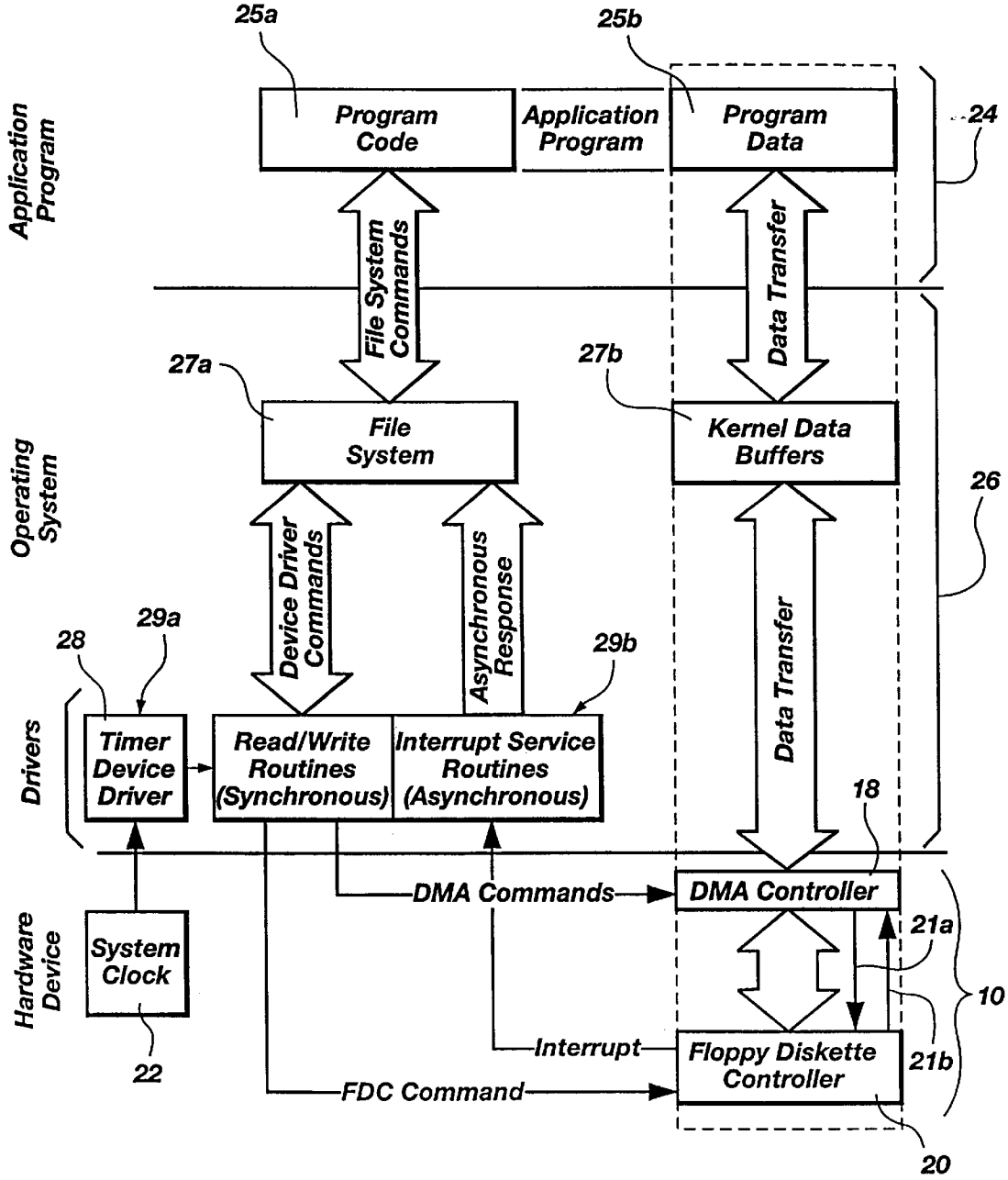

25a
25b
Application Program
Program Code
Application Program
Program Data
24
File System Commands
Data Transfer
27a
27b
Operating System
File System
Kernel Data Buffers
26
Device Driver Commands
Asynchronous Response
28
29a
29b
Drivers
Timer Device Driver
Read/Write Routines (Synchronous)
Interrupt Service Routines (Asynchronous)
Data Transfer
18
DMA Commands
DMA Controller
21a
Hardware Device
System Clock
10
Interrupt
Floppy Diskette Controller
21b
22
FDC Command
20

Fig. 2

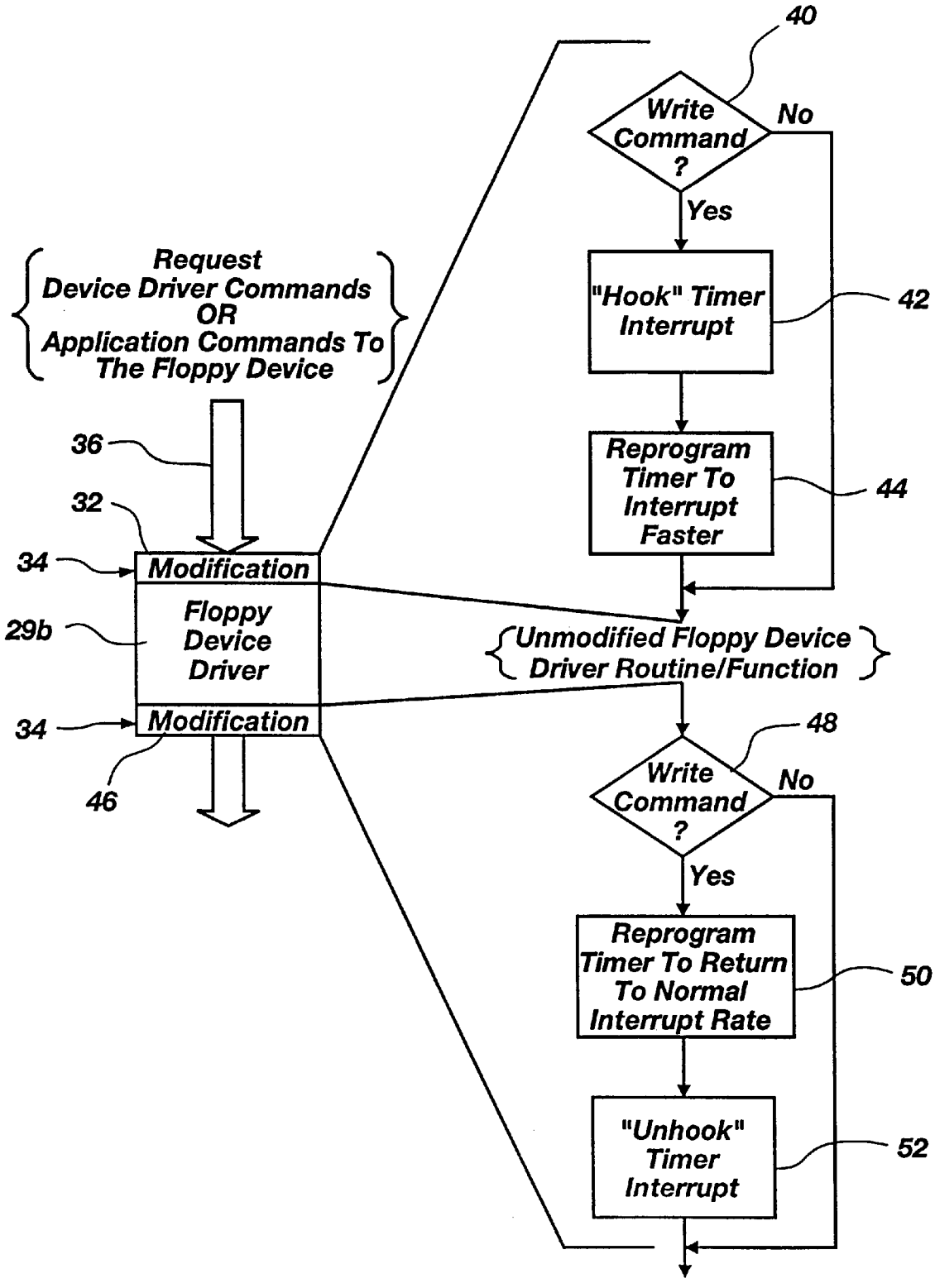

Request
Device Driver Commands
OR
Application Commands To
The Floppy Device
36
32
34
Modification
29b
Floppy
Device
Driver
34
Modification
46
40
Write
Command
?
No
Yes
"Hook" Timer
Interrupt
42
Reprogram
Timer To
Interrupt
Faster
44
Unmodified Floppy Device
Driver Routine/Function
48
Write
Command
?
No
Yes
Reprogram
Timer To Return
To Normal
Interrupt Rate
50
"Unhook"
Timer
Interrupt
52

Fig. 3

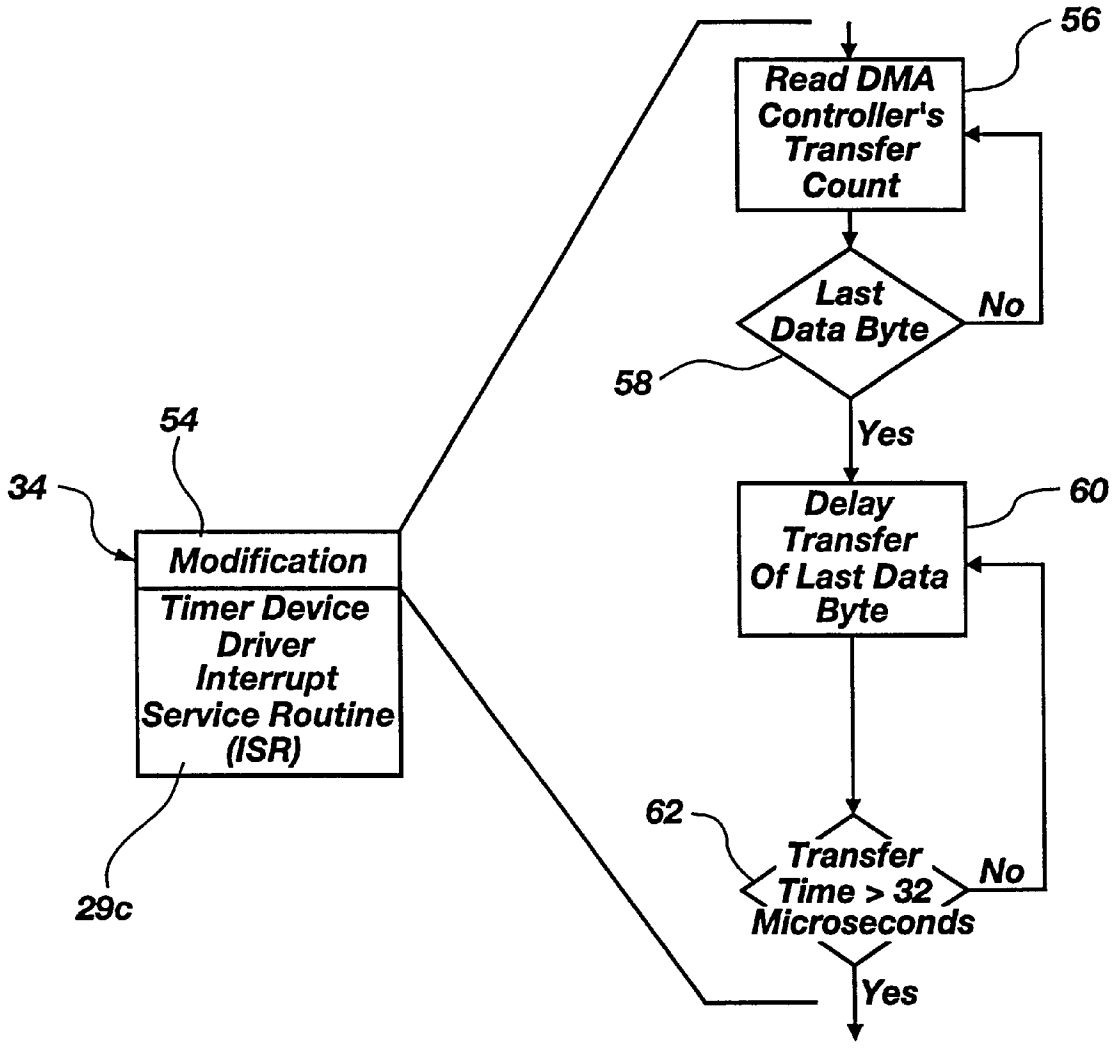

56
Read DMA Controller's Transfer Count
Last Data Byte
No
58
Yes
54
34
Modification
Timer Device Driver Interrupt Service Routine (ISR)
29c
60
Delay Transfer Of Last Data Byte
62
Transfer Time > 32 Microseconds
No
Yes

Fig. 4

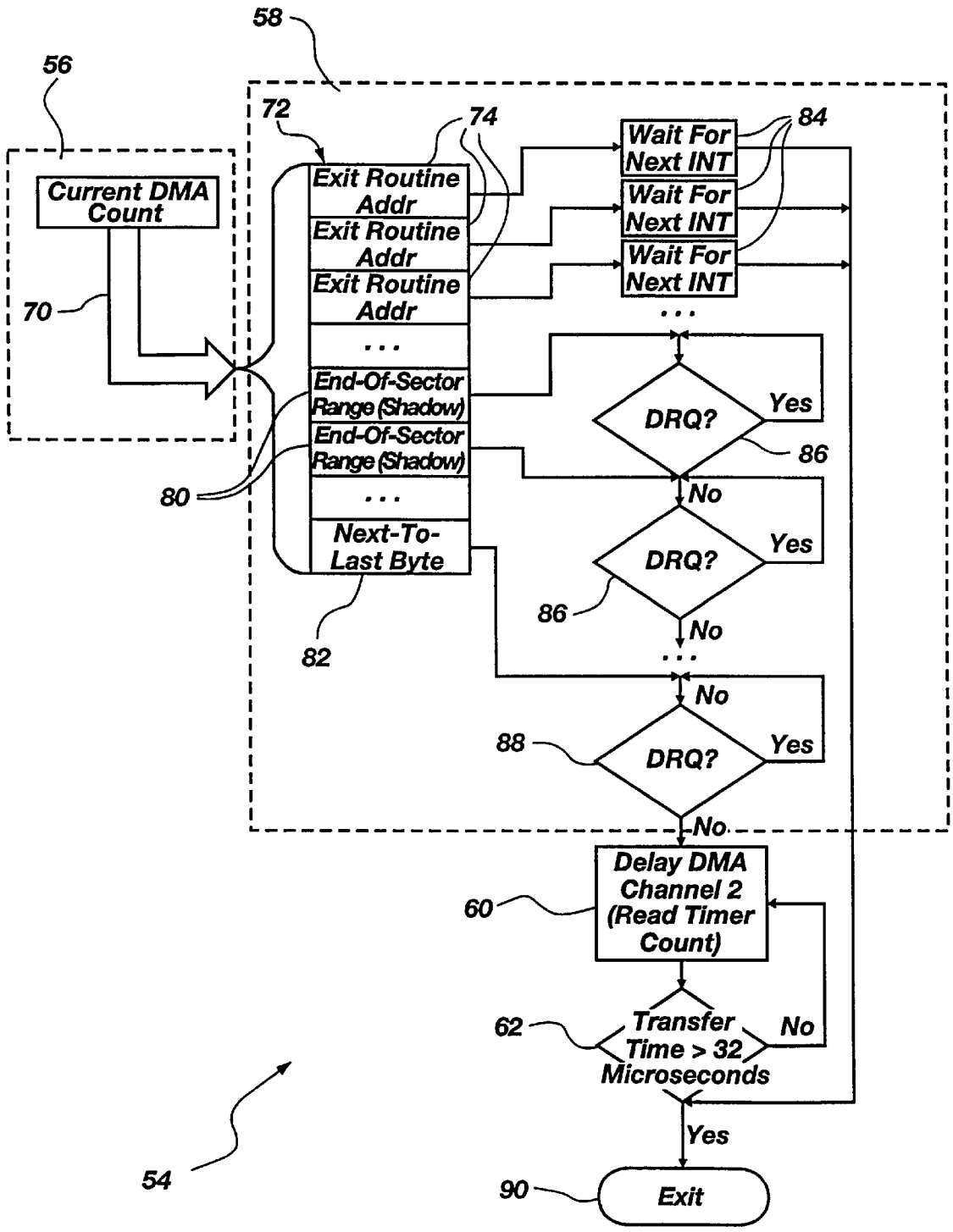

58
56
72
74
84
Current DMA Count
Exit Routine Addr
Exit Routine Addr
Exit Routine Addr
Wait For Next INT
Wait For Next INT
Wait For Next INT
70
End-Of-Sector Range (Shadow)
End-Of-Sector Range (Shadow)
DRQ?
Yes
86
No
80
Next-To-Last Byte
82
88
60
Delay DMA Channel 2 (Read Timer Count)
62
Transfer Time > 32 Microseconds
54
90
Exit

Fig. 5

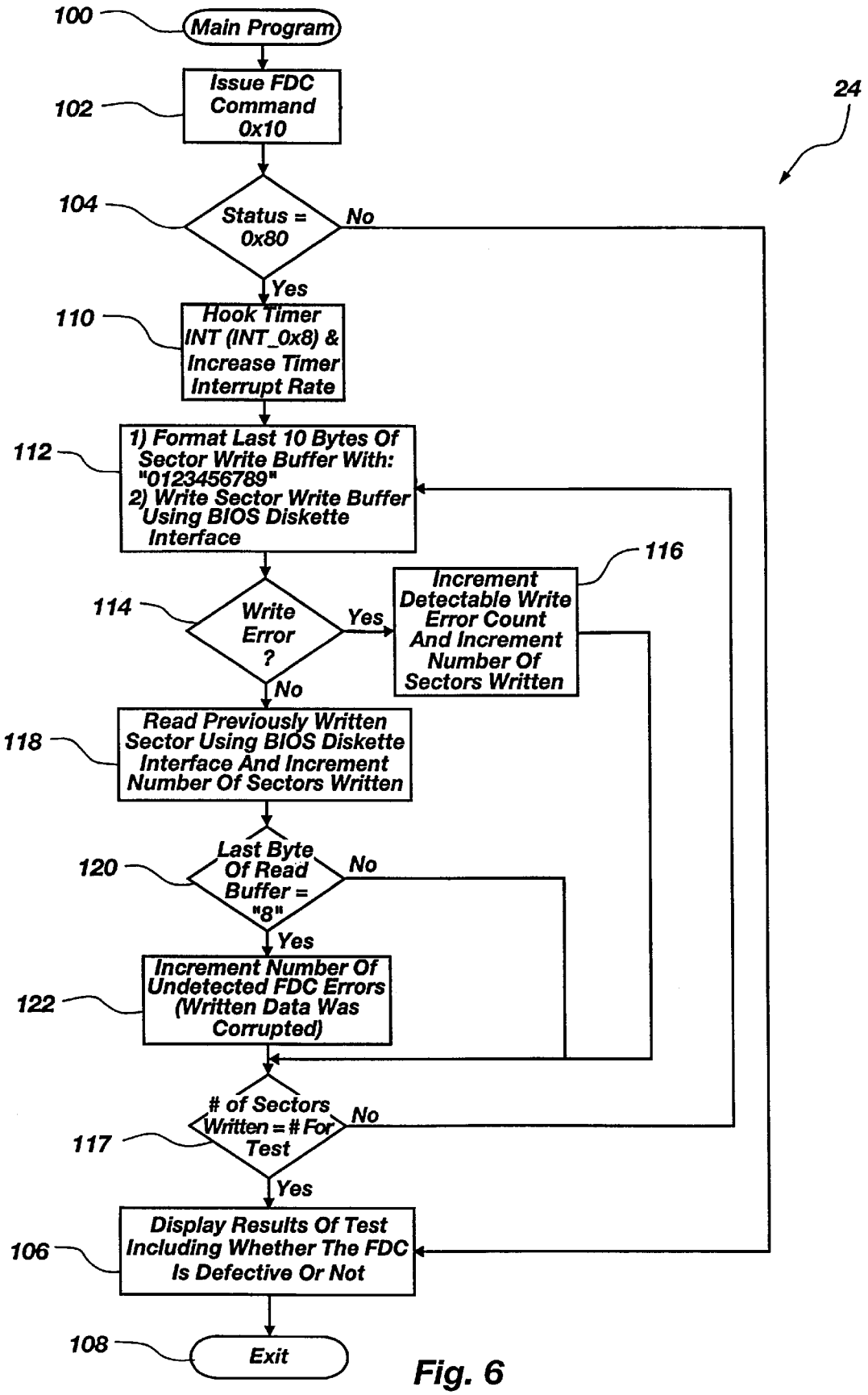

100
Main Program
102
Issue FDC Command 0x10
24
104
Status = 0x80
No
Yes
110
Hook Timer INT (INT_0x8) & Increase Timer Interrupt Rate
112
1) Format Last 10 Bytes Of Sector Write Buffer With: "0123456789"
2) Write Sector Write Buffer Using BIOS Diskette Interface
116
Increment Detectable Write Error Count And Increment Number Of Sectors Written
114
Write Error ?
Yes
No
118
Read Previously Written Sector Using BIOS Diskette Interface And Increment Number Of Sectors Written
120
Last Byte Of Read Buffer = "8"
No
Yes
122
Increment Number Of Undetected FDC Errors (Written Data Was Corrupted)
117
# of Sectors Written = # For Test
No
Yes
106
Display Results Of Test Including Whether The FDC Is Defective Or Not
108
Exit

Fig. 6

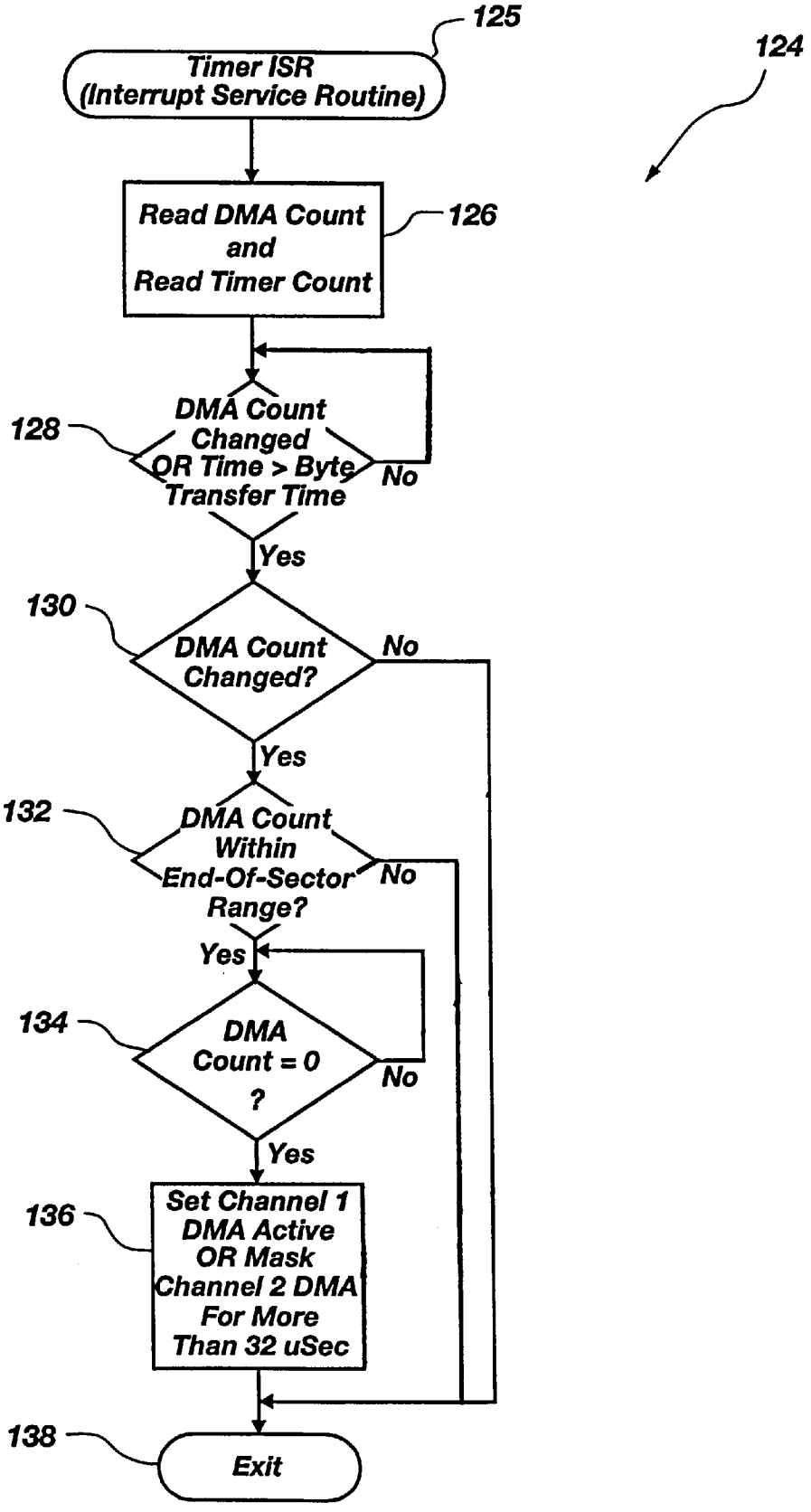

125
124
Timer ISR
(Interrupt Service Routine)
Read DMA Count
and
Read Timer Count
126
128
DMA Count
Changed
OR Time > Byte
Transfer Time
No
Yes
130
DMA Count
Changed?
No
Yes
132
DMA Count
Within
End-Of-Sector
Range?
No
Yes
134
DMA
Count = 0
?
No
Yes
136
Set Channel 1
DMA Active
OR Mask
Channel 2 DMA
For More
Than 32 uSec
138
Exit

Fig. 7

DEFECTIVE FLOPPY DISKETTE CONTROLLER DETECTION APPARATUS AND METHOD

BACKGROUND

1. The Field of the Invention

This invention relates to the detection of defective Floppy Diskette Controllers ("FDCs") where an undetected data error causes data corruption and, more particularly, to novel systems and methods implemented as a software-only detection mechanism which eliminates the need for visual inspection or identification of the FDCs.

2. The Background Art

Computers are now used to perform functions and maintain data that is critical to many organizations. Businesses use computers to maintain essential financial and other business data. Computers are also used by government to monitor, regulate, and even activate, national defense systems. Maintaining the integrity of the stored data is essential to the proper functioning of these computer systems, and data corruption can have serious (even life threatening) consequences.

Most computer systems include diskette drives for storing and retrieving data on floppy diskettes. For example, an employee of a large financial institution may have a personal computer that is attached to the main system. In order to avoid processing delays on the mainframe, the employee may routinely transfer data files from a host system to a local personal computer and then back again, temporarily storing data on a local floppy diskette. Similarly, an employee with a personal computer at home may occasionally decide to take work home, transporting data away from and back to the office on a floppy diskette.

Data transfer to and from a floppy diskette is controlled by a device called a Floppy Diskette Controller ("FDC"). The FDC is responsible for interfacing the computer's Central Processing Unit ("CPU") with the physical diskette drive. Significantly, since the diskette is spinning, it is necessary for the FDC to provide data to the diskette drive at a specified data rate. Otherwise, the data will be written to a wrong location on the diskette.

The design of an FDC accounts for situations occurring when a data rate is not adequate to support a rotating diskette. Whenever this situation occurs, the FDC aborts the write operation and signals to the CPU that a data underrun condition has occurred.

Unfortunately, however, it has been found that a design flaw in many FDCs makes impossible the detection of certain data underrun conditions. This flaw has, for example, been found in the NEC 765, INTEL 8272 and compatible Floppy Diskette Controllers. Specifically, data loss and/or data corruption may routinely occur during data transfers to or from diskettes (or even tape drives and other media attached via the FDC), whenever the last data byte of a sector being transferred is delayed for more than a few microseconds. Furthermore, if the last byte of a sector write operation is delayed too long then the next (physically adjacent:) sector of the diskette will be destroyed as well.

For example, it has been found that these faulty FDCs cannot detect a data underrun on the last byte of a diskette read or write operation. Consequently, if the FDC is preempted or otherwise suspended during a data transfer to the diskette (thereby delaying the transfer), and an underrun occurs on the last byte of a sector, the following occur: (1) the underrun flag does not get set, (2) the last byte written to the diskette is made equal to the previous byte written, and (3) a successful Cyclic Redundancy Check ("CRC") is generated on the improperly altered data. The result is that incorrect data is written to the diskette and validated by the FDC.

Conditions under which this problem may occur have been identified in connection with the instant invention by identifying conditions that can delay data transfer to or from the diskette drive. In general, this requires that the computer system be engaged in "multi-tasking" operation or in overlapped input/output ("I/O") operation. Multi-tasking is the ability of a computer operating system to simulate the concurrent execution of multiple tasks.

Importantly, concurrent execution is only "simulated" because only one CPU exists in a typical personal computer. One CPU can only process one task at a time. Therefore, a system interrupt is used to rapidly switch between the multiple tasks, giving the overall appearance of concurrent execution.

MS-DOS and PC-DOS, for example, are single-task operating systems. Therefore, one could argue that the problem described above would not occur. However, a number of standard MS-DOS and PC-DOS operating environments simulate multi-tasking and are susceptible to the problem.

In connection with the instant invention, for example, the following environments have been found to be prime candidates for data loss and/or data corruption due to defective FDCs: local area networks, 327x host connections, high density diskettes, control print screen operations, terminate and stay resident ("TSR") programs. The problem also occurs as a result of virtually any interrupt service routine. Thus, unless MS-DOS and PC-DOS operating systems disable all interrupts during diskette transfers, they are also highly susceptible to data loss and/or corruption.

The UNIX operating system is a multi-tasking operating system. It has been found, in connection with the instant invention, how to create a situation that can cause the problem within UNIX. One example is to begin a large transfer to the diskette and place that transfer task in the background. After the transfer has begun then begin to process the contents of a very large file in a way that requires the use a Direct Memory Access ("DMA") channel of a higher-priority than that of the floppy diskette controller's DMA channel. These might include, for example, video updates, multi-media activity, etc. Video access forces the video buffer memory refresh logic on DMA channel **1**, along with the video memory access, which preempts the FDC operations from occurring on DMA channel **2** (which is lower priority than DMA channel **1**).

This type of example creates an overlapped I/O environment and can force the FDC into an undetectable error condition. More rigorous examples include a concurrent transfer of data to or from a network or tape drive using a high priority DMA channel while the diskette transfer is active. Clearly, the number of possible error producing examples is infinite, yet each is highly probable in this environment.

For all practical purposes the OS/2 and newer Windows operating systems can be regarded as UNIX derivatives. They suffer from the same problems that UNIX does. Two significant differences exist between these operating systems and UNIX.

First, they both semaphore video updates with diskette operations tending to avoid forcing the FDC problem to occur. However, any direct access to the video buffer, i:n either real or protected mode, during a diskette transfer will bypass this feature and result in the same faulty condition as UNIX.

Second, OS/2 incorporates a unique command that tends to avoid the FDC problem by reading back every sector that is written to the floppy diskette in order to verify that the operation completed successfully. This command is an extension to the MODE command (MODE DSKT VER= ON). With these changes, data loss and/or data corruption should occur less frequently than otherwise. However, the FDC problem may still destroy data that is not related to the current sector operation.

A host of other operating systems are susceptible to the FDC problem just as DOS, Windows, Windows 95, Windows NT, OS/2, and UNIX. However, these systems may not have an installed base as large as DOS, Windows, OS/2 or UNIX, and may, therefore, receive less motivation to address the problem. Significantly, as long as the operating systems utilize the FDC and service system interrupts, the problem can manifest itself. This can occur in computer systems that use virtually any operating system.

Some in the computer industry have suggested that data corruption by the FDC is extremely rare and difficult to reproduce. This is similar to the argument presented during the highly publicized 1994 defective INTEL Pentium scenario. Error rate frequencies for the defective Pentium ranged from microseconds to tens-of-thousands of years! The FDC problem is often very difficult to detect during normal operation because of its random characteristics. The only way to visibly detect this problem is to have the FDC corrupt data that is critical to the operation at hand. However, many locations on the diskette may be corrupted, yet not accessed. In connection with the instant invention, the FDC problem has been routinely reproduced and may be more common than heretofore believed.

Computer users may, in fact, experience this problem frequently and not even know about it. After formatting a diskette, for example, the system may inform the user that the diskette is bad, although the user finds that if the operation is performed again on the same diskette everything is fine. Similarly, a copied file may be unusable, and the computer user concludes that he or she just did something wrong. For many in this high-tech world, it is very difficult to believe that the machine is in error and not themselves. It remains typical, however, that full diskette back-ups are seldom restored, that all instructions in programs are seldom, if ever, executed, that diskette files seldom utilize all of the allocated space, and that less complex systems are less likely to exhibit the problem.

Additionally, the first of these faulty FDCs was shipped in the late 1970's. The devices were primarily used at that time in special-purpose operations in which the FDC problem would not normally be manifest. Today, on the other hand, the FDCs are incorporated into general-purpose computer systems that are capable of concurrent operation (multitasking or overlapped I/O). Thus, it is within today's environments that the problem is most likely to occur by having another operation delay a data transfer to a diskette. The more complex a computer system, the more likely it is that one activity will delay another, thereby creating an FDC error condition.

In short, the potential for data loss and/or data corruption is present in all computer systems that utilize the defective version of this type of FDC, presently estimated at about 50 million personal computers. The design flaw in the FDC causes data corruption to occur and manifest itself in the same manner as a destructive computer virus. Furthermore, because of its nature, this problem has the potential of rendering even secure databases absolutely useless.

Various conventional ways of addressing the FDC problem, such as a hardware recall, have significant associated costs, risks and/or disadvantages. In addition to a solution to the FDC problem, an apparatus and method are needed to accurately, rapidly, reliably, and correctly, identify any defective FDC. The identification of defective FDCs is the first step in attempting to solve the problem of defective FDCs. A solution method and apparatus for repairing a defective FDC are disclosed in U.S. Pat. No. 5,379,414 incorporated herein by reference.

BRIEF SUMMARY AND OBJECTS OF THE INVENTION

In view of the foregoing, it is a primary object of the present invention to provide a method and apparatus for detecting defective Floppy Diskette Controllers ("FDCs").

It is another object of the present invention to provide a software (programmatic) solution that may be implemented in a general purpose digital computer, which eliminates the need for visual inspection and identification of the defective FDCs as well as the need for any hardware recall and replacement.

Consistent with the foregoing objects, and in accordance with the invention as embodied and broadly described herein, an apparatus and method are disclosed in one embodiment of the present invention as including data structures, executable modules, and hardware, implementing a detection method capable of immediately, repeatably, correctly, and accurately detecting defective FDCs. The apparatus and method may rely on 1) determining whether or not the FDC under test is a new model FDC (non-defective), and 2) if the FDC under test is not a new model FDC, installing an interposer routine to force the FDC to delay a transfer of a last data byte of a sector either to or from the floppy diskette whose controller is tested. A test condition is thus created in the hardware to cause defective FDCs to corrupt the last data byte of the sector. A second portion of an apparatus and method may confirm a diagnosis. Thus the apparatus and method may ensure that old-model non-defective FDCs are not wrongly identified as defective.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other objects and features of the present invention will become more fully apparent from the following description and appended claims, taken in conjunction with the accompanying drawings. Understanding that these drawings depict only typical embodiments of the invention and are, therefore, not to be considered limiting of its scope, the invention will be described with additional specificity and detail through use of the accompanying drawings in which:

FIG. **1** is a schematic block diagram of an apparatus illustrating the architecture of a computer system for testing a floppy diskette controller ("FDC")in accordance with the invention;

FIG. **2** is a schematic block diagram illustrating software modules executing on the processor and stored in the memory device of FIG. **1**, including application programs, operating systems, device drivers and computer system hardware such as a floppy diskette;

FIG. **3** is a schematic block diagram of a flow chart depicting one presently preferred embodiment of certain modifications that may be applied to a diskette device driver in order to force an otherwise undetected error condition to occur in a defective FDC, thus enabling the defective FDC detection apparatus and method of the present invention to be activated;

FIG. **4** is a schematic block diagram of a flow chart depicting one presently preferred embodiment of certain modifications that may be made to a timer Interrupt Service Routine ("ISR") to allow timing of a transfer byte's DMA request and DMA acknowledge (DREQ/DACK) cycle in order to ensure that proper conditions exist to create data corruption associated with defective FDCs in accordance with the present invention;

FIG. **5** is a schematic block diagram of a flow chart depicting one presently preferred embodiment of a software decoding network (software vector-table) for use in connection with a defective FDC detection apparatus and method in accordance with the present invention, the software decoding network having one code point/entry for each possible transfer byte in a sector;

FIG. **6** is a schematic block diagram of a flow chart depicting one presently preferred embodiment of an application implementation of the apparatus and method of FIGS. **3** and **4**, wherein a main "driver" portion of an application forces an undetected error condition in a defective FDC enabling activation of a the defective FDC detection system in accordance with the invention; and

FIG. **7** is a schematic block diagram of a flow chart depicting one presently preferred embodiment of certain modifications that may be made to a timer Interrupt Service Routine embedded within the application of FIG. **6** to allow timing of a last byte's DREQ/DACK cycle, ensuring that proper conditions exist to create data corruption associated with defective FDCs in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

It will be readily understood that the components of the present invention, as generally described and illustrated in the Figures herein, could be arranged and designed in a wide variety of different configurations. Thus, the following more detailed description of the embodiments of the system apparatus and method of the present invention, as represented in FIGS. **1** through **7**, is not intended to limit the scope of the invention, as claimed, but it is merely representative of the presently preferred embodiments of the invention.

The presently preferred embodiments of the invention will be best understood by reference to the drawings, wherein like parts are designated by like numerals throughout.

The architecture of an apparatus **10**, including computer system implementing one embodiment of the invention is illustrated in FIG. **1**. A Central Processing Unit ("CPU") **12** and main memory **14** may be connected by a bus **15** inside a computer system unit. Instructions (executables) and data structures used by the CPU **12** are kept in main memory **14** during computer work sessions. Main memory **14** is, however, not a permanent storage place for information; it is active only when the apparatus **10** (computer system) is powered up (on). Thus, to avoid losing data, data must be saved on some type of non-volatile storage device. For example, the apparatus may use a "hard disk" storage device permanently installed in the computer system. A computer system **10** may have at least one floppy diskette drive **16** that receives a removable floppy diskette (magnetic storage medium). The floppy diskette likewise may be used for "permanent" (non-volatile) storage of data or software (executables) outside of the computer system **10** flexible (floppy) diskettes are especially useful for transferring data and information between separate computer systems **10**.

In transferring data to a floppy diskette, the CPU **12** may program a Direct Memory Access ("DMA") controller **18** for an input/output ("I/O") transfer. The CPU **12** issues a command to a Floppy Diskette Controller ("FDC") **20** to begin the I/O transfer, and then waits for the FDC **20** to interrupt the CPU **12** with a completion interrupt signal. It is also possible to perform Programmed I/O ("PIO") directly between the CPU **10** and the FDC **20** without involving the DMA controller **18**. This latter approach is seldom used; the majority of computer systems **10** employ DMA for I/O transfers to and from the floppy diskette drive **16**. The invention will thus be described below with particular reference to the DMA controller **18**. If PIO is employed, however, then an I/O transfer is totally controlled by the CPU **12** because the CPU **12** is required to pass each and every data byte to the FDC **16**. As a result, the "DMA shadowing" system and method in accordance with the invention may be directly applied to a PIO data stream. This is readily tractable because the CPU **12** already is controlling the I/O transfer, as will become more readily apparent.

A computer system **10** may have a system clock **22**. The system clock **22** is beneficial when initiating an I/O transfer to the diskette drive **16** because one must not only control the data transfer, but also a drive motor. In this regard, it is important to know when the diskette drive motor has brought a diskette's spin rate up to a nominal RPM required for a data transfer to be successful.

For example, in IBM Personal Computers and "compatibles," the system clock **22** interrupts the CPU **12** at a rate of 18.2 times per second (roughly once every 54.9 milliseconds). This interrupt is used to determine such things as diskette drive motor start and stop time. There are also a host of other time-dependent operations in the computer system **10** that require this granularity of timing.

One presently preferred embodiment of an association between application programs **24** (executables), operating systems **26**, device drivers and hardware is depicted in FIG. **2**. The example presented corresponds to a floppy diskette having a controller **16**.

A system suitable for implementing the invention may include an application program **24** including both executable code **25***a* and associated data **25***b*. The application **24** may interface with the hardware apparatus **10** through an operating system **26**. The operating system may include a file system **27***a* as well as selected buffers **27***b*. The file system **27***a* may include an executable for file system management as well as operating system interfacing. The file system **27***a* may issue commands to drivers **28**.

The drivers **28** may include a timer device driver **29***a*, including a timer ISR, interfacing to the system clock **22**. Likewise, a media drive driver **29***b*, alternatively referred to as a media driver **29***b* may be included. The media driver may interface with a floppy diskette drive or other media drive **16** to maintain persistent storage on media **17**. Although a media drive **16** may typically relate to floppy diskettes, tape drives and other magnetic media may also be used in an apparatus and method in accordance with the invention.

The media driver **29***b* may be responsible for sending instructions and control signals to the media drive controller **20**, which is typically embodied as a floppy diskette controller **20**. Similarly, the media driver **29***b* may instruct and control the DMA controller **18**. The DMA controller manages data transfers between the floppy diskette controller (FDC **20**) and the main memory device **14**. A DMA request (DRQ;DREQ **21***a*) may pass from FDC controller **20** to the

direct memory access controller **18** (DMA controller **18**). Likewise, a DMA acknowledge **21***b* or acknowledgement **21***b*, alternatively referred to as a (DACK **21***b*) may be returned from the DMA controller **18** to the FDC **20**.

Referring now to FIGS. **3–5**, and more FIGS. **3** and **4**, a method in accordance with the present invention include a module **32**, one of several interposer routines **34**, which is placed between an application's **24** request **36** for floppy service and a floppy device driver **29***b*. The interposer routine **32** is actually a new or modified device driver that forces certain undetected FDC data corruption conditions to exist. As shown, the interposer **32** first tests **40** whether an operation requested **36** is a floppy diskette write operation. Read operations are equally susceptible to the problem and may be used in the detection process, if desired. If so, the major function of the interposer **32** is to insert itself between the application request **36** for floppy service and the floppy device driver **29***b* that will service the request. In a PC/MS-DOS environment, this can be accomplished by "hooking" the INT 0×13 interrupt vector and directing it to the FDD prefix **32** or interposer routine **32**. Reprogramming **44** the timer **22** to interrupt faster (e.g., every 4–7 milliseconds) than normal (e.g. 54.9 milliseconds).

As will become more fully apparent from the following discussion, once a floppy write operation is detected, in a test **40** a software decoding network call vector of the timer interrupt **54** (see FIGS. **4–5**) is preferably installed. The current byte count is read **56**, and DMA shadowing **58** begins. When a test **58** shows that a current DMA transfer count (countdown) has reached 0, then the interposer routine **54** delays **60** the DMA transfer of the last byte of the sector transfer. The delay continues until a test **62** determines that the elapsed time is greater than the maximum time required for a data byte to be transferred to the medium **17** (e.g. a low-density diskette; >32 uSec).

This delay **60** forces defective FDCs **20** into an undetected data corruption condition. This condition can be tested **120** by reading back **118** the written data to see whether the last byte or the next-to-the-last byte was actually written to the last byte location of the sector.

Referring again to FIG. **3**, the system clock **22** may be reprogrammed **50** in a suffix routine **46** appended to the floppy device driver **29***b*. The system clock **22** may then interrupt normally (e.g., every 54.9 milliseconds). The timer interrupt **54** is "unhooked" **50** until the test **40** reports the next floppy write operation.

One could allow the timer **22** (clock **22**) to always interrupt at the accelerated rate. Then, a check the timer Interrupt Service Routine ("ISR") **29***c* (see FIG. **4**), within the timer device driver **29***a*, may then determine whether a media (e.g. diskette) write operation is active. Likewise, it is possible to randomly check to see if the last byte of a floppy sector write operation is in progress. However, the foregoing method has superior efficiency and accuracy in creating the condition required for the detection of defective FDCs.

As used herein, "DMA shadowing" may be thought of as programmatic CPU **12** monitoring of data (byte) transfers and timing the last byte of a sector's DREQ **21***a* to DACK **21***b* signals. Importantly, there are, of course, a number of ways of determining when the DREQ **21***a* is present and when the DACK **21***b* is present. The present invention may include the use of any "DMA shadowing" whether the DREQ **21***a* and DACK **21***b* signals are detected at the DMA controller **18**, CPU **12**, system bus **15** or FDC **20**. This includes both explicit means, and implicit means.

For example, inferring the state of the DREQ/DACK cycle is possible from various components in the system that are triggered or reset from transitions of such signals **21***a*, **21***b*. In one embodiment the DACK **21***b* may cause a Terminal Count ("TC") signal to be asserted by the DMA controller **18**. Therefore, one may imply from the detection of the TC that a DACK **21***b* has occurred.

Whenever an application **24** requests a write operation of the media drive **16**, the system clock **22** may be reprogrammed to interrupt, for example, every 4 to 7 milliseconds. Referring again to FIGS. **4–5**, each time the system clock **22** interrupts, the current byte count in the transfer register (countdown register) DMA controller **18** is read **56**. Once the test **58** indicates that the byte counter has reached the last byte, the signal transition from DREQ **21***a* to DACK **21***b* may be timed and accordingly delayed **60**. This transition may be forced to be greater than the maximum time required to transfer one data byte as indicated in the test **62**.

Therefore, defective FDCs **20** are forced into an undetected data corruption state. This state may be detected by writing known data patterns to the next-to-the-last and the last data bytes. Reading the data back will reveal which of the two data bytes was stored in the last byte of the sector. Finally, it is possible to also detect defective FDCs **20** by significantly increasing the delay time during the transfer of the last byte of a sector. This forces the next physically adjacent sector to be zeroed out except for the first byte of that sector.

For the system to maintain proper operation, an interposer routine **34** should save the original INT 0×13 (Hex 13th interrupt vector) contents (address of the original INT 0×13 Interrupt Service Routine) and invoke the original when necessary. Additional aspects of the interposer function **34** are discussed below in connection with other features of the device driver **29***b*.

This implementation of the apparatus and method of the present invention is contemplated for use on an IBM Personal Computer running the PC/MS-DOS operating system. Versions have, however, been developed to operate in the Windows, OS/2 and UNIX environments and may be embodied for other operating systems. The invention is not limited to use with any particular operating system, and adaptations and changes which may be required for use with other operating systems will be readily apparent to those of ordinary skill in the art.

As depicted graphically in FIG. **4** below, a timer ISR routine **29***c* is used for servicing the accelerated interrupt rate of the system clock **22**. The reason that the system clock interrupt rate is accelerated is that during a normal 512 byte data transfer (the typical sector size) 16 microseconds are required for each data byte to be transferred to the FDC (High Density Diskette Mode). Therefore, a typical sector transfer requires 512 times 16 microseconds, or 8,192 microseconds. If the diskette is a low density diskette then the sector transfer time is doubled to 16,384 microseconds (512 times 32 microseconds) because the FDC has half of the amount of data to store in the same rotational time frame (typically 360 RPM).

Referring to FIG. **5**, the timer ISR routine **29***c* within the timer device driver **29***a* with its prefix **54** performs checks on the system **10** to determine if the system **10** is actually transferring data to the FDC **20**. If a sector transfer is not in progress then the timer ISR prefix **54** exits immediately. However, if a sector transfer is in progress then the timer ISR prefix **54** obtains the remaining byte count of the sector transfer **70** and vectors (jumps) through the software decoding network **72** (DMA count table **72**) to an appropriate processing routine **84**, **86**, **88**.

Although the steps **56**, **58** of the module **54** may be implemented with the timer **22** continually interrupting every 8, 16, or 32 microseconds. This level of interrupts may totally consume a PC's processing power, and on most PCs could not be sustained. Thus, in order to perform I)MA shadowing without affecting the total system performance it is important to allow normal operations to continue as usual. It is desirable to have an interrupt (the system clock **22**) that will interrupt close to the end of the sector transfer so that the DREQ **21***a* to DACK **21***b* timing may be determined on the last byte of the sector transfer.

Thus, it is possible to DMA shadow **58** all 512 bytes during a sector transfer, but that would cause the CPU to be totally consumed during the entire sector transfer time. The potential of losing processing activities elsewhere in the system are greatly increased, as in serial communications. Therefore, the clock interrupt routine **29***c* or method **29***c* of FIG. **5** may reduce the CPU involvement to a bare minimum during those floppy write operations with DMA Shadowing. Significantly, the timing may be adjusted to any number of bytes of a sector transfer, from a few bytes to the entire sector count.

One operation performed in the timer ISR routine **29***c* is to vector through the software decoding network **72** to the appropriate processing routine **84**, **86**, **88**. This process is illustrated graphically in FIG. **5**. The software decoding network **72** (software vector-table **72**) has one code point/entry **74**, **80**, **82** for each possible transfer byte in the sector.

The timer interrupt rate can now be in terms of 10's or 100's of byte transfer times. The vector table **72** may cause the program execution of the CPU **12** to enter a cascade **86** of DREQ **21***a*/DACK **21***b* checks only when the transfer (sector) will complete prior to the next timer interrupt. In short, the first entries **74** in the vector table **72** will return **84**, since another timer interrupt will occur before the sector transfer completes. The latter entries **80**, within the desired range, will cascade **86** from one DREQ **21***a*/DACK **21***b* detection to another (shadowing **58** the DMA transfers) until the last byte is transferred.

On the last byte being transferred, the data byte may be delayed by either activating a higher priority DMA **18** channel or masking the DMA channel of the FDC **20**. Although these two techniques are the simplest to program, numerous alternatives may be used to delay **60** data transfers on the DMA **18** channel of the FDC **20**, in accordance with the invention

This software decoding network process **54** is the fastest known software technique for decoding and executing time-dependent situations. Space in the memory space **14** (e.g. the software decoding network vector table **72**) is traded for processing time, the amount of time it would take for one routine to subsume all functionality encoded in each of the routines **84**, **86**, **88** vectored to through the software decoding network vector table **72**.

As indicated above, the entire software decoding network table **72** may be initially set to the address of an "exiting routine **84**." Then depending upon how slow or fast the system clock **22** interrupts, a certain number of the lower-indexed entries **80** of the table **72** may be set to the address of a processing routine **86**. These processing routines **86** may be identical and sequentially located in the routine **54**. Thus, the software decoding network vector table **72** may simply vector the timer ISR routine **29***c* within the driver **29***a* to the first of n sequentially executed processing routines. Here, n represents the number of bytes remaining in the sector transfer. In this way the last few bytes of the sector transfer can be accurately monitored (DMA Shadowing **58**) without significantly affecting overall system performance.

Each of the processing routines **86**, except the last one **88**, may perform exactly the same function. It is not necessary to be concerned with the timing between the DREQ **21***a* and DACK **21***b* signals until the very last data byte of a transfer. Therefore, the routines **86**, **88** above "shadow" **58** the operation of the DMA until the last byte (e.g. corresponding to entry **82** of the vector **72**) at which time the DMA channel of the FDC **20** is delayed as previously described.

Thus, through software DMA shadowing, it is possible to reliably determine when the last byte of the transfer is about to be transferred. Therefore, it is possible to force the last data byte's transfer to be delayed. An alternative approach may include a specialized application program **24** to control all aspects of the operation of the media drive **16**, e.g. floppy diskette drive **16**. This may include a transfer delay of a last byte, as indicated in FIGS. **6** (main application) and **7** (timer interrupt service routine) All aspects of the previous approach may be present. However, here they may be collected into a single application program **24** performing the required functions. The application program **24** may reprogram the system clock to interrupt at an accelerated rate and services the interrupt itself. The application program may then begin a repeated set of diskette write operations using the BIOS interface interrupt (0×13) and then read the written sectors back. Once the sector has been written and read back the data is compared to determine whether or not an undetected error has occurred. A running total of both detected and undetected errors may be output to a display.

Referring now to FIG. **6**, an application **24** may begin at an entry point **100** leading to an initial command **102**. Command **102** is effective to request of a floppy diskette controller (FDC) **20** an identification. A status return of 0×90 (hexadecimal 90) indicates that a FDC **20** is not defective. Alternatively, the command **102** may give rise to a status return of 0×80 hexadecimal 80. This return does not guarantee that an FDC **20** is not defective.

Thus, a test **104** determines whether or not the status of an FDC **20** is hex 80. A negative response may advance the application **24** to a display step **106**. The display **106** may output results of the application **24**. Results may include an indication of whether the FDC **20** being tested is defective or not. Accordingly, a status not equal to a hex 80 results in the test **104** signifying that an FDC **20** is not defective. The step **108** thereafter exits the application **24**.

A positive response to the test **104** advances the application **24** to a hook **110**. The hook **110** is effective to interpose a timer prefix **124** (see FIG. **7**) corresponding the prefix **34** of FIG. **3**, to be installed to operate at the beginning of a timer ISR **29***c* within the timer device driver **29***a*.

A test pattern **112** may format the last few (for example, 10) bytes of a sector write buffer **27***b*. Any known pattern may suffice, for example, a sequential list of all digits from zero to nine may be used. Importantly, the last two digits in such a sequence should be distinct. Thus, a string "0123456789" may provide a test pattern to be written in the last ten bytes of a sector. The test pattern may then be written from a buffer **27***b* to a medium **17** using the BIOS interface for the medium **17** and medium drive **16**.

Following the test pattern **112**, a test **114** may determine whether or not a write error has occurred in writing the buffer **27***b* to the medium **17**. A positive response to the test **114** results in an increment step **116**. The increment **116** tracks the number of successful detections of errors. Thus,

the increment **116** indicates that another write error was successfully detected by the FDC **20**. Accordingly, the application **24** may advance from the increment **116** to a test **117**. A test **117** may determine the number of sectors to which the FDC **20** has attempted to write. If the response to the comparison of the test **117** is positive, then all tests are completed and the display step **106** follows. On the contrary, a negative response to this test **117** returns the application **24** to the test pattern **112**, initiating another test cycle.

A negative response to the test **114** indicates that a write error, known to exist, was undetected by the FDC **20**. Accordingly, a negative response to the test **114** advances the application **24** to a read **118**. The read **118** reads back the last previously written sector, using the BIOS diskette interface, such as the driver **29***b*. The step **118** may then increment the number corresponding to sectors that the FDC **20** has attempted to write.

The application **24** may next advance to the test **120** to determine whether the last byte that th e read step **118** has read back from the written sector to a buffer **27***b* is the last, or the next-to-last element of the test pattern from the test pattern step **112**. That is, for example, in the Example above, the test **120** determines whether or not the last byte read back to the buffer **27***b* from this sector being tested is "8" a value of "8" indicates that the FDC has failed to write the tenth element of the test pattern into the last byte location of the sector. This indicates that the FDC has not indicated a write error in the test **114**, and yet has produced the error detected by the test **120**. Thus, the last sector written is corrupted.

A negative response to the test **120** indicates that the last byte was not incorrectly written. Accordingly, the application **24** may advance to the test **117** to determine whether or not the testing is completed. A positive response to the test **120** results in an increment step **122**. The increment step **122** advances the count of undetected errors found during the operation of the FDC **20** during the testing in question. Thus, a step **122** results in a corruption count for sectors attempted to be written by the FDC **20**.

Referring now to FIG. **7**, and also cross-referencing to FIG. **6**, the hook step **110** may install a prefix **54** to a timer ISR **29***c* within the timer device driver **29***a* (see FIG. **4**). The hook **110** interposes the prefix **124** corresponding to the prefix **54** of FIG. **4**, after a call **125** or entry point **125** to the timer ISR **29***c* within the timer device driver **29***a*. Accordingly, whenever the timer ISR **29***c* within the timer device driver **29***a* is called, the prefix **124** will be run before any executables in the timer ISR **29***c* within the timer device driver **29***a*.

The prefix **124** may begin with a read **126** affective to determine a count corresponding to the number of bytes, or a countdown of the remaining bytes, being transferred by the DMA controller **18** from the main memory **14**, through the buffer **27***b* to the FDC **20**. The read **126** may also include a reading of a count (a tick count) of a timer **22** or system clock **22**.

Following the read **126**, a test **128** may determine whether or not an operation is in process affecting the FDC **20**. The FDC **20** is in operation if a count kept by the DMA controller **18** has decremented (changed) within an elapsed time corresponding to the maximum time required for a byte to be transferred. If no change has occurred during that elapsed time, then one may deduce that no activity is occurring. Accordingly, a negative response to the test **128** results in reexecution of the test **128**. Reexecution of the test **128** may continue until a positive response is obtained. Inasmuch as the application **24** is executing a write during the test pattern **112**, an eventual positive response to the test **128** is assured. In one embodiment of an apparatus and method in accordance with the invention, the first byte transferred may typically be detected.

A positive response to the test **128** advances the prefix routine **124** to a test **130** to test the countdown or count of the DMA controller **18**. The test **128** corresponds to detection of activity, whereas the test **130** corresponds to iteration of a shadowing process.

The test **130**, whenever a negative response is received, may advance the prefix routine **124** to the exit **138**.

On the other hand, a positive response to the test **130** advances the prefix routine **124** to a test **132** effective to evaluate whether or not the countdown is within some selected range at the end of a sector. A negative response to the test **132** indicates that the countdown is not within some desired end-of-sector range, so the prefix routine **124** should exit **138** without waiting longer. That is, interrupts will continue to occur with a frequency that will detect the desired range at the end of the sector being tested.

A positive response to the test **132** advances the prefix routine **124** to a test **134** for detecting the last byte to be transferred in a sector. If the DMA controller **18** is not counting the last byte to be transferred, then the test **134** may simply continue to test. When the countdown of the DMA controller **18** reaches a value of zero, a positive response to the test **134** advances to a delay step **136**.

The delay step **136** corresponds to the delay **60** illustrated in FIGS. **4–5**. The delay **136** may be implemented by preempting a channel over which the DMA controller **18** is communicating with the FDC **20**. For example, a first channel may be made active by some process, thus, overwriting communication over some channel having lesser priority, and corresponding to the FDC **20**. Likewise, the channel corresponding to the DMA communication with the FDC **20** may be masked (suspended) until the time elapsed for the transfer of the data to the sector has exceeded the maximum time permitted for such transfer. Thus, any and all opportunities for writing the last byte to the sector had expired. Thus, an error condition has been assured. Once the delay **136** has assured an error condition the exit **138** returns control of the processor **12** to the non-interrupted processing state.

The invention described heretofore provides detection solution that may be completely implemented in software as a device driver **29***b* that is capable of detecting defective FDCs **20** without visual inspection and identification of the FDCs. Furthermore, the unique and innovative approach taken, relying on DMA shadowing and use of a software decoding network, allows the implementation of the invention to accurately and correctly detect defective FDCs even when non-defective old-model FDCs are involved. Simply stated, it is not sufficient to determine whether the FDC under test is an old or new model FDC. Various vendors manufactured old-model FDCs that are not defective. Therefore, a two-phase detection process may correctly determine whether or not the FDC under test is defective.

The number of FDCs installed in computer systems today is well over 100 million. In order to identify defective FDCs vendors and consumers which have defective FDCs **20** installed have very few alternatives (e.g. recalls; replacement), of which most are extremely costly, for determining whether or not their systems are susceptible to the data corruption presented by defective FDCs **20**. Therefore, an apparatus and method that may be implemented as a software-only solution to this problem is a significant

advance in the computer industry. Moreover, the robust design allows the apparatus and method of the present invention to dynamically adjust to processor speeds that encompass the original IBM Personal Computers executing at 4.77 MHz to the latest workstations that execute at well over 200 MHZ.

The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative, and not restrictive. The scope of the invention is therefore, indicated by the appended claims, rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed and desired to be secured by United States Letters Patent is:

1. An apparatus for detecting a defective floppy diskette controller, the apparatus comprising:

a processor executing detection executables effective to determine an underrun error undetected by a floppy diskette controller and effective to identify the floppy diskette controller as defective;

a memory device operably connected to the processor to store the detection executables and corresponding detection data;

a system clock operably connected to the processor to provide a time base;

a media drive comprising storage media for storing data;

the floppy diskette controller operably connected to the media drive to control formatting and storage of data on the storage media; and

a direct memory access controller operably connected to the floppy diskette controller and the memory device to control transfers of data between the memory device and the floppy diskette controller.

2. The apparatus of claim **1** wherein the detection executables are effective to cause an underrun error.

3. The apparatus of claim **2** wherein the detection executables cause the underrun error by delaying a transfer of data between the direct memory access controller and the floppy diskette controller.

4. The apparatus of claim **3** wherein the underrun error comprises a delay in transferring a last byte in the transfer.

5. The apparatus of claim **3** wherein the detection data comprises a test pattern.

6. The apparatus of claim **5** wherein the underrun error comprises the test pattern incorrectly copied onto the storage media.

7. The apparatus of claim **1** wherein the detection executables further comprise a prefix routine effective to hook a floppy device driver operating on the processor to control the floppy diskette controller.

8. The apparatus of claim **1** wherein the detection executables are integrated into an application directly loaded and executed on the processor.

9. The apparatus of claim **8** wherein the application is effective to determine on demand whether the floppy diskette controller is susceptible to undetected underrun errors.

10. The apparatus of claim **1** wherein the detection executables include a shadowing executable effective to determine when a last byte is to be transferred from the direct memory access controller to the floppy diskette controller.

11. A memory device operably connected to a processor, a direct memory access controller, a floppy diskette controller controlled by the direct memory access controller, and a media drive controlled by the floppy diskette controller, the memory device storing blocks of data comprising:

a test pattern;

detection executables effective to be run on the processor to force and detect an underrun error not detected by the floppy diskette controller; and

a readback buffer to store a copy of the test pattern read back from the media drive.

12. A method for detecting an underrun error undetected by a floppy diskette controller, the method comprising the steps of:

writing a source test pattern from a memory device to storage media in a media drive controlled by the floppy diskette controller;

interrupting the writing step;

delaying a transfer of a last byte of the source test pattern to the floppy diskette controller to create the underrun error;

completing the writing step;

verifying whether the floppy diskette controller detected the underrun error.

13. The method of claim **12** further comprising reading back to the memory device a written test pattern corresponding to the source test pattern written during the writing step.

14. The method of claim **13** further comprising verifying whether the underrun error occurred in the writing step by checking the last byte of the written test pattern.

15. An apparatus for detecting a defective floppy diskette controller, the apparatus comprising:

a processor executing detection executables effective to precipitate and detect an underrun error undetected by a floppy diskette controller and effective to identify the floppy diskette controller as a defective floppy diskette controller;

a memory device operably connected to the processor to store the detection executables and corresponding detection data;

a system clock operably connected to the processor to provide a time base;

a media drive comprising storage media for storing data;

the floppy diskette controller operably connected to the media drive to control formatting and storage of data on the storage media; and

a direct memory access controller operably connected to the floppy diskette controller and the memory device to control transfers of data between the memory device and the floppy diskette controller.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 5,983,002
DATED : November 9, 1999
INVENTOR(S) : Philip M. Adams

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 9,
Line 5, please change "l)MA" to --DMA--.

Column 11,
Line 19, please change "th e" to --the--.
Line 50, please change "affective" to --effective--.

Signed and Sealed this

Twenty-sixth Day of June, 2001

Attest:

Nicholas P. Godici

Attesting Officer

NICHOLAS P. GODICI
Acting Director of the United States Patent and Trademark Office